IDG .net

Product review: Popular firewalls hold the fort equally, but differences show up in ease of use and flexibility. Buyer's Guide, page 74

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
November 3, 1997 · Vol. 31 · No. 44 · 134 pages · $3/Copy $48/Year

AlliedSignal races to the Web

▸ *Twin-cam site targets business users, car buffs*

By Sharon Machlis

A DIVISION OF AlliedSignal, Inc. will launch an ambitious $1.5 million World Wide Web site next month that company executives said will pay for itself within a year.

The site's uniqueness lies in targeting both the die-hard car buff and the heavy-duty business customer. "I think that's smart," said Vernon Keenan, a senior analyst at Zona Research, Inc. in Redwood City, Calif. "They're creating a sense of community that will make 'Regular Joe Hot Rod' come back."

"We wanted to put a stake in the ground, something to differentiate us," said Eric Singleton, vice president of information systems at AlliedSignal Automotive Aftermarket in East Providence, R.I.

A cornerstone of the site, *www.highperformancedriving.com*, is AlliedSignal's massive parts catalog, which fills about 70 paper volumes.

Business customers will be able to place orders at the site, which AlliedSignal expects

AlliedSignal, page 112

Chat rooms move into boardrooms

By Barb Cole-Gomolski

MAIL BOXES ETC. in San Diego will use it to conduct monthly sales meetings with 2,700 franchisees. A major investment house is using it to host online events where clients pose questions to financial experts.

It isn't a pricey videoconferencing system, and it isn't a virtual private network. It's Internet chat, the real-time messaging technology that to date has been most popular with teenagers.

Users and analysts said chat holds great potential for businesses because it lets people

Internet chat, page 16

DAVID ZADIG

MPB's Rick Flagler was at first "freaked out" about his year 2000 problem. But after getting more information, he's much calmer.

The end is near! Or is it? The **year 2000** problem is causing **a panic** in some circles. But there are those experts who say there's **no need to sweat it.** Have vendors and the press inflated it into an **IT Armageddon?** It depends on your circumstances.

Managing, page 69

Record volume floods brokers, tests Web sites

By Tim Ouellette, Stewart Deck and Kim S. Nash

THE DELUGE of trades that flooded stock markets early last week also served as a reality check for online brokerages about the pitfalls of electronic commerce.

Inaccessible World Wide Web sites and poor response time crippled and infuriated many Internet investors.

But observers said the problems weren't any different from what traditional, full-service brokerages experienced when about 2 billion shares traded hands Tuesday.

"[Online traders] were as prepared as full-service brokers," said Michael Gazala, an analyst at Forrester Research, Inc. in

Stocks, page 112

MARC BERLOW

Detroit Edison's Jackie Benson: Many organizations don't practice the diversity goals they preach

IS recruiters clamor for minority talent

The labor shortage may actually be good news for racial diversity in IS. Recruiters are offering impressive salaries and $2,000 signing bonuses to much of the senior class at Howard University in Washington, for example. "We have more diversity in IS than in any other department," says Jorge Figuredo, head of human resources at Liz Claiborne, a clothing designer in New York.

Despite those positive signs, minorities in IS still face daunting challenges, including cultural gaps, a persistent glass ceiling and a lack of mentors.

IT Careers, page 88

INSIDE THIS ISSUE

COMPUTER GAFFES INFECT HMO
Oxford Health to post losses amid Unix migration woes. Page 2

IN A 'GALAXY' FAR, FAR AWAY
Digital sets plans for OpenVMS clustering technology. Page 3

Hard times at SGI
Red ink triggers layoffs, departure of CEO McCracken. Page 4

A DISASTER WAITING TO HAPPEN
Firms neglect backup plans for distributed systems. Page 28

NEWSPAPER

Hughes Defense Communication honors Gateway 2000 with "Supplier Excellence Award".

It was loud and cle[illegible] Hughes Defense Communication announced on Friday that Gateway 2000

Ocean Spray names Gateway 2000 supplier of the year.

More good [illegible] for the Major Accounts Division of Gateway 2000, as ju[illegible]

Union Pacific names Gateway 2000 supplier of the year.

[illegible] full steam ahead for Gateway 2000's major accounts division, as the [illegible] commercial freight

Cisco's John Chambers vows to support the technology users want, not just what he currently sells. The Enterprise Network, page 51

David Usery fought turf wars to get Colorado agencies to share data. Corporate Strategies, page 43

In this issue

NEWS

4 **Obscure technique promises** a no-sweat way to extend year 2000 deadline to 2059.

6 **Police fight** crime online, with suspect-tracking and victim notification systems.

10 **Informix appears** to get things right with new server packaging and pricing.

12 **Recruiters lick** their chops after Citicorp announces IS layoffs, but it's unclear who's on the hit list.

OPINION

36 **E-commerce shifts into** second gear as mainstream manufacturers get online, Maryfran Johnson predicts.

37 **IS resents freewheeling** webmasters but should use them to forge interdepartmental links, Michael Schrage advises.

TECHNICAL SECTIONS

CORPORATE STRATEGIES

43 **Reality frightens** E-commerce vendor that rebuilds new site to match volume projections.

43 **Employers ignore** background checks at their peril in rush to fill critical jobs.

THE INTERNET

47 **Training moves** online, saving money and time for tax firm, specialty school.

47 **Office supply sites miss** opportunities with poor sites and a dearth of offerings.

47 **Virus team turns** its attention to spam, as junk E-mail threatens to swamp corporate networks.

47 **Intranet vendor ships** update that links Web sites with SQL databases.

THE ENTERPRISE NETWORK

51 **Novell hits** with secure, fast Internet access product for NetWare.

51 **3Com, Tivoli link** network management and application tools.

51 **Users hate** their local carriers, but will they switch when competition comes?

SOFTWARE

57 **Vendors hobble** Java, reducing multiplatform capability; users like it anyway.

57 **Development tools adopt** workflow features to rein in unruly projects.

57 **File manager utilities help** ease drudgery of Windows systems.

57 **Macintosh users wait** for the next version of Office for compatibility with Office 97.

SERVERS & PCs

63 **Storage managers juggle** data among a host of servers and disk subsystems.

63 **Digital pumps up** Alpha server line, even as it sells part of the chip to Intel.

63 **Apple PDA strikes** chord with business users, who wait for one aimed at them, not their kids.

63 **Compaq pushes** NT models as alternative for workstation users seeking price breaks on Unix.

FEATURES

MANAGING

69 **Year 2000 creates panic**, but some experts say there's no need to sweat.

CAREERS

88 **Minorities increase** in IS, but lack of mentors and role models holds some back.

92 **IS "transplants" reflect** on life in North and Central Florida.

IN DEPTH

83 **We visit** with virus fighters who are chasing the ghost in the machine.

ETC.

Company index ____ 110
Editorial/Letters ____ 36
How to contact CW ____ 110
Inside Lines ____ 116
Stock Ticker ____ 108

Lotus to fix file viewer

▸ *Bug affects Notes 4.x and Excel spreadsheets*

By Gordon Mah Ung

LOTUS DEVELOPMENT CORP. said it is working on a fix for the file viewer in Notes that shows an incorrect number when viewing Microsoft Corp. Excel spreadsheets.

Lotus officials denied reports that the company knew about the bug six months ago and said a fix will be available soon.

The problem affects Notes 4.x versions and most versions of Excel. It appeared at the BugNet Alert World Wide Web site (*www.bugnet.com*) last week after a frustrated user complained about the work-around he was given by Lotus parent, IBM.

"Their work-around was to not use the file viewer," said Craig Lowenthal, vice president of information technology at Reliance National Insurance Co. in New York. "How realistic is it to send out an E-mail and ask users not to use it?"

The bug appears when Excel spreadsheet attachments are opened through the built-in Notes viewer. Custom-formatted cells in the spreadsheet lose a decimal place, turning an amount of 460,190.92, for example, into 46,019,092. The bug doesn't affect the spreadsheet if opened through Excel.

Lowenthal said it came to his attention when the chief financial officer at his company saw a spreadsheet for a particular budget and hit the roof.

ROOT OF THE PROBLEM

The viewer is made by Inso Corp. in Boston. Officials at the company last week said they knew the older viewer had a bug but it was corrected in a new version that has been available for almost a year.

"It's really a case of Lotus and their right to make the decision when and what version of the technology they make available," said a spokesman for Inso. Inso offers for about $50 a retail version of its viewer that will correct the problem. □

SET protocol gets boost

By Sharon Machlis

IN A MAJOR STEP forward for the Secure Electronic Transaction (SET) protocol, VeriFone, Inc. has rolled out a suite of commercial products based on the SET 1.0 standard.

But critics said SET is still a long way from widespread use for purchases in cyberspace.

SET, which is being developed by major financial companies including Visa International, Inc. and MasterCard International, Inc., is aimed at creating online transactions that can't be spoofed, hacked or altered.

VeriFone's suite includes software for handling the bank, merchant and consumer roles in a secure, online credit-card transaction.

VeriFone, a subsidiary of Hewlett-Packard Co., holds 65% of the U.S. market for point-of-sale terminals, so its support for an electronic buying standard is important, said Karen Epper Hoffman, an analyst at Forrester Research, Inc. in Cambridge, Mass.

BA Merchant Services, Inc., a division of BankAmerica in San Francisco, is satisfied with early SET pilot results and plans to continue working with the security standard as it matures. "This is really the beginning," said Bill Campbell, vice president of product management at the company.

NOT QUITE READY

But some believe SET is still too immature and complex. At AlliedSignal, Inc. in East Providence, R.I., developers of a major World Wide Web site looked at SET but decided to stick with Secure Sockets Layer (SSL) encryption technology for now.

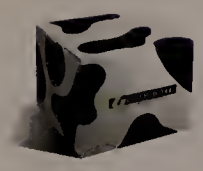
"[SET is] not up to speed," said AlliedSignal program manager Kristy Davis.

It is more likely to scare people away, she said, because consumers probably don't want to go through the process of obtaining a digital certificate to make spontaneous, one-time buys.

And SET client software for end users isn't widely available yet.

The VeriFone suite includes VPOS merchant software priced starting at $995; VGATE for financial institutions, which is priced based on transaction volume; and VWallet end-user software, which banks will provide free to consumers. □

Not all endorsements require a profes si with a $40 million contract.



No endorsement can make you feel comfortable unless it comes from a credible source. And with one major corporation after another switching to Gateway 2000, that's exactly what you get.

Like you, other corporate IS/IT managers needed business computers specifically designed to meet their needs and exceed their expectations. So that's precisely what we gave them.

For starters, the E-Series desktop line meets manageability head-on with features like stable network-ready platforms, DMI compliance and LANDesk Client Manager. So your company can grow at its own pace.

And no one in the industry can match the degree of modularity offered by Gateway™ Solo™ portable computers. Now, not only can you switch components individually with one product, you can also switch components across the entire Gateway Solo line.

We also have a full line of servers that are among the industry leaders in fault-tolerance capabilities. And each server is equipped with components that allow for easy scaleability in memory and expansion in network size. So if your company grows from 30 employees to 3,000, now your network can too.

Of course, our full line of workstations can grow with you as well. Each workstation is certified with Microsoft Windows NT and leading application software. And each one features industry-leading graphic power which provides you with uncompromising performance.

The way we see it, when it comes to business computers, we won't stop until we're the leader. So give us a call, and we'll put you in touch with one of our sales representatives. They'll be happy to answer all your questions. Of course, you could also talk to our friends at Union Pacific, Ocean Spray, Hughes Defense Communication...

MMX™ intel inside pentium® II processor

©1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, "G" logo and "You've got a friend in the business" slogan are registered trademarks; GATEWAY and Gateway Solo are trademarks; and Gateway Gold i Pentium II processor. The Gateway Solo PC does not contain the Pentium II processor. All other brands and product names are trademarks or registered trademarks of their respective companies. Many Gateway 2000 pr change without notice or obligation. Prices do not include shipping or applicable sales tax. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc. *E-Series PCs are covered by a three-year to qualified commercial customers. Lease payments based on 36-month term. Lease terms subject to change without notice or obligation.

ssional athlete

E-1000 Low Cost Network-Ready Desktop ■ Intel® 166MHz Pentium® Processor with MMX™ Technology ■ 16MB SDRAM ■ 256K Pipelined Burst Cache ■ EV500 .28 Screen Pitch 15" Monitor (13.9" viewable) ■ Integrated PCI Video with 2MB DRAM ■ 1.2GB EIDE Hard Drive ■ 3.5" Diskette Drive ■ 16-Bit Sound Blaster® Compatible Business Audio ■ Integrated 10/100 Fast Ethernet ■ E-Series Low-Profile Desktop Case ■ 104-Keyboard & Mouse ■ Microsoft® Windows® 95 ■ Desktop Management Interface (DMI) 1.1 Compliant ■ Intel LANDesk® Client Manager 3.01 **$1099** Business Lease †$40/mo.

E-3110SE Mainstream Network-Ready Desktop ■ Intel 233MHz Pentium® II Processor with MMX Technology ■ 32MB SDRAM ■ Integrated 512K Pipelined Burst Cache ■ EV700 .28 Screen Pitch 17" Monitor (15.9" viewable) ■ AccelGraphics® Permedia® 2 32-Bit AGP with 8MB SGRAM ■ 3.2GB Ultra ATA Hard Drive ■ 12X CD-ROM Drive and 3.5" Diskette Drive ■ 3Com® Ethernet Adapter ■ E-Series Mid-Tower Case (shown with desktop case option) ■ 104-Keyboard and MS® IntelliMouse™ ■ MS Windows 95 ■ (DMI) 1.1 Compliant ■ Intel LANDesk Client Manager 3.01 ■ Gateway Gold℠ Service and Support for E-Series PCs* **$1999** Business Lease †$73/mo.

E-3110XL High Performance Network-Ready Desktop ■ Intel 300MHz Pentium II Processor with 512K ECC Cache ■ 64MB SDRAM ■ EV900 .26 Screen Pitch 19" Monitor (18" viewable) ■ AccelGraphics Permedia 2 32-Bit AGP with 8MB SGRAM ■ 6.4GB Ultra ATA Hard Drive ■ 12X CD-ROM Drive and 3.5" Diskette Drive ■ 3Com Ethernet Adapter ■ E-Series Mid-Tower Case ■ 104-Keyboard and MS IntelliMouse ■ MS Windows 95 ■ (DMI) 1.1 Compliant ■ Intel LANDesk Client Manager 3.01 ■ Gateway Gold Service and Support for E-Series PCs* **$2999** Business Lease †$110/mo.

E-5002 Technical Workstation ■ Intel 300MHz Pentium II Processor (expandable to two processors) ■ 128MB ECC SDRAM ■ EV900 .26 Screen Pitch 19" Monitor (18" viewable) ■ 8MB AccelGraphics Permedia 2 AGP Graphics Card ■ Seagate® 9GB 10,000 RPM Ultra Wide SCSI Hard Drive ■ 12X SCSI CD-ROM Drive and 3.5" Diskette Drive ■ 3Com 10/100 PCI Network Card ■ E-Series Workstation Tower Case ■ 104-Keyboard & MS IntelliMouse ■ Intel LANDesk Client Manager 3.01 ■ MS Windows NT® 4.0
$4999 Business Lease †$183/mo. CDRS-03 **32.42**

Gateway Solo 2300 Portable ■ 12.1" SVGA TFT or SVGA DSTN Color Display ■ Intel Pentium Processor with MMX Technology up to 233MHz ■ SDRAM Expandable to 192MB ■ 256K Pipelined Burst Cache ■ 128-Bit Graphics Accelerator w/64K Colors ■ Up to 4GB Hard Drive ■ Modular 3.5" Diskette Drive ■ Modular 6X min/11X max CD-ROM Drive ■ 16-Bit Wavetable Sound & Stereo Speakers ■ NiMH Battery & AC Pack or a 12-Cell Lithium Ion Battery & AC Pack ■ 85-Key MS Windows 95 Keyboard ■ Carrying Case ■ NTSC/PAL Video Out ■ USB Ports & Zoomed Video ■ MS Windows 95 or MS Windows NT 4.0 ■ MS Works 95 or MS Office 97, Small Business Edition plus Bookshelf® 96 ■ LapLink® for Windows 95 & McAfee® VirusScan ■ Gateway Gold Service and Support for Portable PCs **Prices starting at $2099** (Quantity 1) Business Lease †$77/mo.

Gateway Solo 9100 Portable ■ 13.3" XGA TFT Color Display (1024 x 768 resolution) ■ Intel Pentium Processor with MMX Technology via Intel's Mobile Module (I.M.M.) ■ SDRAM Expandable to 192MB ■ Up to 512K Cache ■ 4MB EDO Video RAM (1280 x 1024 external) ■ Up to 5GB Hard Drive ■ Removable Combo 6X min/11X max CD-ROM & 3.5" Diskette Drives ■ Premium Sound System w/16-Bit Wavetable Sound & Yamaha® Stereo Speakers ■ 12-Cell Lithium Ion Battery & AC Pack ■ Full 88-Key MS Windows 95 Keyboard ■ Carrying Case ■ NTSC/PAL Video Input & Output ■ USB Ports & Zoomed Video ■ 15-Pin MIDI/Game Port ■ MS Windows 95 or MS Windows NT 4.0 ■ MS Works 95 or MS Office 97, Small Business Edition plus Bookshelf 96 ■ LapLink for Windows 95 & McAfee VirusScan ■ Gateway Gold Service and Supportfor Portable PCs **Prices starting at $3499** (Quantity 1) Business Lease †$128/mo.

NS-7002 Workgroup Class Server ■ Intel 300MHz Pentium II Processor with 512K Cache (expandable to two processors) ■ Error-Checking and Correcting Memory Subsystem with 64MB RAM ■ Several RAID Upgrades Available ■ 4GB Ultra Wide SCSI Hard Drive ■ 12X SCSI CD-ROM Drive and 3.5" Diskette Drive ■ 3Com 10/100 Ethernet Adapter ■ Seven-Bay Server Tower Case ■ 325-Watt Power Supply ■ 104-Keyboard & Microsoft IntelliMouse ■ InforManager™ Server Management System with ActiveCPR Processor Protection **$3299** Business Lease †$121/mo.

NS-8002 Department Class Server ■ Intel 300MHz Pentium II Processor with 512K Cache (expandable to two processors) ■ Error-Checking and Correcting Memory Subsystem with 128MB RAM ■ Quick Hot-Swap (QHS) RAID Storage System with Three Channel Controller ■ Three Hot-Swappable 4.2GB SCA Hard Drives ■ 12X SCSI CD-ROM Drive and 3.5" Diskette Drive ■ 3Com 10/100 Ethernet Adapter ■ Thirteen-Bay Server Tower Case ■ Dual 365-Watt Redundant Power Supplies with Loadshare Capability ■ 104-Keyboard & MS IntelliMouse ■ InforManager Server Management System with ActiveCPR Processor Protection **$7999** Business Lease †$293/mo.

NS-9006 Enterprise Class Server ■ Two Intel 200MHz Pentium Pro® Processors with 512K Cache (expandable to six processors) ■ Error-Checking and Correcting Memory Subsystem with 128MB RAM ■ Quick Hot-Swap (QHS) RAID Storage System with Three Channel Controller ■ Three 4.2GB SCA SCSI Hard Drives ■ 12X SCSI CD-ROM Drive and 3.5" Diskette Drive ■ 3Com 10/100 Ethernet Adapter ■ Double-Wide Fourteen-Bay Chassis ■ N+1 Power Supply Subsystem with Two Hot-Pluggable 350-Watt Power Supplies (upgradeable to four) ■ 104-Keyboard & MS IntelliMouse ■ InforManager Server Management System with ActiveCPR Processor Protection **$12,999** Business Lease †$476/mo.

GATEWAY2000

"YOU'VE GOT A FRIEND IN THE BUSINESS"®

CALL 1-888-888-0787 www.gateway.com

Gateway 2000 Major Accounts, Inc.

ervice mark of Gateway 2000, Inc. The Intel Inside Logo, Intel, LANDesk and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Not all Gateway E-Series PCs and NS-Series Servers contain the cts are custom engineered to Gateway 2000 specifications which may vary from the retail versions of the software and/or hardware in functionality, performance, or compatibility. All prices and configurations are subject to ted warranty. Length and type of service varies by product. Call or write for a free copy of our limited warranty: 800-846-2000. 610 Gateway Drive, N. Sioux City, SD 57049. †Leasing arranged by independent leasing companies

UP FRONT

Un-smart card

My credit-card company just pulled the plug on my free credit card. My offense? Paying my bills on time.

Perhaps more savvy use of information systems could have prevented this divorce. Two years ago, Beneficial National Bank and BJ's Wholesale Club, a consumer wholesale chain, announced with great fanfare a no-fee MasterCard that refunded customers a percentage of their purchases as cash-equivalent coupons. Those could be used at the wholesale club.

I became a regular customer, charging everything I could, but I always paid my bills in full to avoid finance charges.

In Beneficial's eyes, I was too good a customer. So were a lot of other people. This summer, Beneficial announced it wouldn't renew tens of thousands of BJ's MasterCard accounts of customers who were paying their bills in full and on time — just like me. Beneficial was losing its shirt on the deal. The announcement got big coverage in the local media, with Beneficial looking like Snidely Whiplash. The bank eventually reinstated the accounts but with an annual fee.

In Beneficial's eyes, I was too good a customer.

I suspect some creative data mining could have spared Beneficial and BJ's a public relations embarrassment. Better forecasting probably would have revealed that BJ's customers are the kind of financial opportunists who would make the credit card risky in the first place. Maybe BJ's could have defrayed costs by making customer spending data available for Beneficial to leverage in other promotions. Or perhaps customers like me would have been willing to part with some personal spending information in exchange for the free card.

Beneficial won't discuss its data mining efforts, and BJ's didn't return phone calls. Both companies would just as soon forget the whole thing. But the public relations damage has been done. I won't be renewing my BJ's card. And that's probably a relief to Beneficial.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE
BY RICH TENNANT

E-mail Rich Tennant at thefwave@tiac.net

Computer ills trigger health plan losses

By Thomas Hoffman

HIGH-FLYING Oxford Health Plans, Inc. has been laid low by a computer problem that caused the company to overestimate revenue and underestimate medical costs.

The announcement from the $3 billion Norwalk, Conn.-based health maintenance organization that it will post its first-ever loss tomorrow stunned investors (see chart). Oxford's stock price fell 62% last Monday to close at $25.87, before creeping back to $27 by last Wednesday.

Oxford has had problems dating back to last September in the migration of its claims processing system from the Pick operating system to a Unix-based system that uses Oracle Corp. database software and hardware from Pyramid Technology Corp.

But company officials told analysts this spring that it had fixed the mess that had delayed millions of dollars in back payments to scores of physicians and hospitals in the New York area.

BIG SURPRISE

"I was stunned because all indications coming from the company were that things were going well," said Greg Crawford, an analyst at Fox-Pitt, Kelton, Inc., a New York-based brokerage.

Oxford officials declined to provide details on the computer problems, noting that the company is in a "quiet" period before its earnings come out Nov. 4.

Oxford has been a juggernaut in the managed-care arena, buoyed by strong membership growth and keen marketing. Analysts have also praised the company's use of the World Wide Web, which gives members access to lists of providers and allows physicians to check the status of claims (*www.oxhp.com*).

In April, David Finkel, Oxford's vice president of operations, told *Computerworld* that "nearly all of the issues" had been resolved and that Oxford was processing 88% to 89% of all claims within 30 days.

But the computer problems haven't gone away, nor have complaints about billing delays. "I'm still seeing angry letters crossing my desk," said Martin Schaum, a Garden City, N.Y., attorney who represents physicians at Long Island Jewish Medical Center in New Hyde Park, N.Y., and New York Hospital/Cornell Medical Center in New York.

A spokeswoman for one of the hospitals affected by the reimbursement delays — North Shore University Hospital in Manhasset, N.Y. — said its billing problems with Oxford have been largely resolved.

Despite the computer problems, Oxford's members don't appear to have been affected. In a recent survey of 2,964 respondents, Oxford was ranked first in customer satisfaction out of nine commercial health care plans in New Jersey, according to CareData Reports, Inc. in New York.

The study, which included Aetna/U.S. Healthcare and Prudential Insurance Company of America, covered 150 aspects of member satisfaction, including claims handling and billing issues, said Tod Cooperman, CareData's president and CEO.

Oxford Health Plans
Norwalk, Conn.

Problem

- Accounts receivable system overestimated revenue and membership enrollment and underestimated medical costs.

Results

- Charge against third-quarter earnings of $47 million to $53 million.
- Expected third-quarter loss of $65.4 million to $69.3 million.
- Revenue for the quarter expected to be $111 million less than previous estimates.

Oxford's accounts receivable billing errors recently came to the company's attention "as a result of reviewing and reconciling previously delayed premium bills and medical claims," said Stephen F. Wiggins, Oxford's chairman, in a press release.

Because Oxford officials wouldn't answer question about the company's problems, analysts said they couldn't estimate how much it will cost to fix Oxford's systems or whether the computer glitches will put a drag on future earnings. □

IS women and the Web

Although there are lots of valuable resources on the Internet, several sites are especially valuable to women in IS. Come to our site to find a few favorites.

www.computerworld.com
@COMPUTERWORLD

U.S. will get peek at DEC Galaxy

▸ *OpenVMS technology allows multiple systems*

By Jaikumar Vijayan

DIGITAL EQUIPMENT CORP. is expected to unveil early details of its OpenVMS Galaxy clustering technology at this week's Digital Equipment Computer User Society (DECUS) conference in Anaheim, Calif.

But questions about the future of the OpenVMS operating system following Digital's Alpha chip settlement with Intel Corp. last week could undercut interest in the technology (see story, page 33).

Digital's Galaxy technology for OpenVMS, set to ship in the second half of next year, will let users split one multiprocessing machine into multiple systems that run their own copy of the operating system. That kind of partitioning will increase system availability and make it easier for users to consolidate and manage large servers.

"What it means is that Digital remains serious about the VMS marketplace, especially at the high end," said Terry Shannon, editor of "Shannon Knows DEC," a newsletter in Ashland, Mass. "Galaxy offers some compelling cost of ownership and consolidation attributes."

Galaxy will run on current Digital servers but will probably ship on a new 32-processor Alpha server, code-named Wildfire, that Digital is readying for release next year.

Users welcomed the idea.

"If it does not degrade performance, it would be a great thing" from a server manageability point of view, said Fernando Yson, manager of Alpha systems at Unicare in Huntington Beach, Calif.

"It would allow us to provide multiple types of services from a single box and give us the added security" of having multiple servers in one place, said Brian Cuttler, VMS manager at the State University of New York in Albany.

"But Digital's silence on the future of OpenVMS is disconcerting," Cuttler said.

The concern was prompted by last week's announcement by Digital that it will port its 64-bit Unix to the forthcoming IA-64 technology being developed by Intel and Hewlett-Packard Co.

"It is not the kind of feeling customers want if they have to make large investments" in technologies such as Galaxy, Cuttler said.

Digital also will unveil Wave 5 in its Affinity product line at DECUS. Aimed at linking OpenVMS environments with Windows NT, Affinity tools give users enhanced mail and messaging integration, system management tools and an integrated transaction processing monitor for both environments. □

Digital's Galaxy Software Architecture

Processors: Up to 256 CPUs

Memory: Up to 1T byte

Ports: Up to 200 I/O

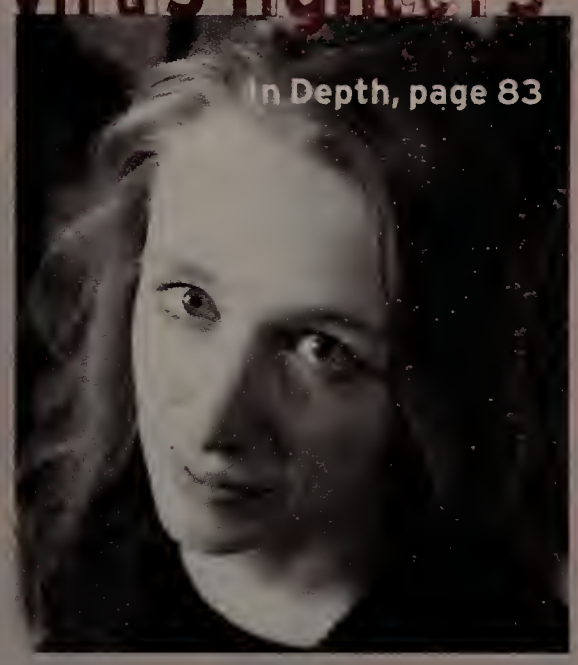
Source: "Shannon Knows DEC," Ashland, Mass.

& **Digital pumps up Alpha servers. Page 63**

Let's see. You've got your macro viruses, your boot-sector viruses, your polymorphous viruses. You've got your clever boys who turn "elite" by wiping out your hard drive. And on deck, you've got your ActiveX, a potential virus hotbed. For the labs that fight destructive code, business is booming. Computerworld spent a few days with ...

The virus fighters

In Depth, page 83



NICK CARDILLICHIO

Shannon Peters Talbott, manager of advanced research at Network Associates

Start-up pitches cheaper switches

By Bob Wallace

LOOKING TO LURE users with rock-bottom prices, NDC Communications, Inc. soon will announce a pair of 10/100M bit/sec. switches at half the cost of boxes from the Big Four switch makers.

The little-known Sunnyvale, Calif., vendor next week will unveil the NSH500, a five-port 10/100 switch that costs $127 per port; and the NSH800, an eight-port model that will cost $124 per port. Street prices are likely to be less than $100 per port.

"This is a great deal, considering that Bay, 3Com and others weigh in at $250 to $350 per port with their newest 10/100 switching systems," said Craig Johnson, an analyst at Current Analysis in Ashburn, Va. "Companies like NDC without huge brand recognition compete on price and hope to make up [margins] on volume sales."

More expensive switches tend to have more networking features, such as remote monitoring for switch troubleshooting, Johnson said. But the NDC boxes won't ship until the first quarter of next year, giving major vendors time to bring down their own prices.

Johnson said he expects advancements in application specific integrated circuits to cut the price of boxes from Bay Networks, Inc., 3Com Corp., Cisco Systems, Inc., Cabletron Systems, Inc. and others. □

FCC: Put V-chip on PCs?

By Patrick Thibodeau

THE CONTROVERSIAL V-chip soon could end up in any PC that can receive video images.

The Federal Communications Commission is soliciting comment on putting the V-chip in PCs. The signal-blocking V-chip, which was included in last year's telecommunications deregulation law, requires that makers of "any apparatus" designed to receive television signals include the chip. FCC officials said computers, because they can be used to receive TV signals, are potentially covered.

As long as TV is defined as something that is broadcast over government-licensed channels, "we will comply with that law," said Joe Tasker, a vice president and associate general counsel at Compaq Computer Corp. But if the government wants to use a V-chip for Internet content "that is absolutely wrong, and we will fight that absolutely hard because that's not television — the Internet is not television."

"We think this is sort of a veiled attempt to sort of backdoor things like the [Communications Decency Act]. Most computers are accepting video, and the distinction between what's going to be video for broadcast and video for the Internet is getting increasingly slim," said Dave Banisar, an attorney at the Electronic Privacy Information Center in Washington. □

Senior writer Sharon Machlis contributed to this story.

Tivoli tool enhances inventory tracking

By Patrick Dryden

TIVOLI SYSTEMS, INC. last week upgraded the inventory tool that plugs in to its enterprise management framework so managers can better track the components of client/server networks.

TME 10 Inventory 3.2 can automatically discover the hardware and software configuration of more systems. And it can more easily sift through that information or apply it to tasks such as software distribution.

BENEFITS

A half-dozen vendors announced plans to take advantage of those improvements with their help desk and asset management tools, which also can plug in to the TME 10 framework.

Three out of four organizations still take inventory manually, according to International Data Corp. in Framingham, Mass.

"The most significant benefit here will be to help the TME 10 adoptees pull together asset information throughout the framework, especially if they have one of the partners' products in place," said Alison Palmer, an analyst at Hurwitz Group, Inc. in Framingham, Mass.

TME 10 Inventory 3.2 now can scan NetWare software from Novell, Inc. and more than 1,000 commercial Unix applications, beyond the 4,000 PC applications it already recognizes, said officials at Tivoli in Austin, Texas.

Additional databases and data defined by Desktop Management Task Force specification are supported. A new graphical query tool can extract data for viewing or export.

TME 10 Inventory 3.2 is available now. It costs $2,000 per server and $75 per client. □

& **3Com and Tivoli partner to manage networks. Page 51**

Year 2000 fix uses compilers

Idea is to change the way computers recognize numbers, but some are skeptical it will work

By Thomas Hoffman

TWO BROTHERS in Encino, Calif., claim they have come up with a new way to deal with the year 2000 problem by changing the way computers recognize numbers.

A digit on a computer can hold up to 16 characters. When a computer adds "1" to "99", it recognizes "00" as 1900. Without changing programs or databases, the so-called "19To" technique would change compilers to define more than 10 possible numbers for a single digit, thus allowing computers to calculate beyond the year 1999.

THE NUMBERS GAME

"Think of a car's odometer with two digits and a light on the dashboard that tells you when you have gone over 99 miles," said Bill Lappen, 44, who developed the technique with his brother, David, at 19To Solutions in Encino. "Our method replaces the 'tens' wheel on the odometer with a larger wheel that just keeps counting past nine and doesn't turn on the light."

The fix would allow users to keep running date-sensitive applications until 2059, Lappen said. That gives companies "a pretty good patch before they have to go in and expand their date fields to four digits," he said.

HOW MUCH DOES IT COST?

Individual users and small companies with revenue of less than $5 million will be offered use of the technique free of charge. Larger organizations interested in 19To will have to rely on software vendors to create new compilers embedded with the technology. The cost for bigger shops would be reflected in the costs of those compilers, which can range anywhere from $300 to $70,000, Lappen said.

Lappen said he has already talked to a handful of vendors about building new compilers to work with his technology, such as IBM and Digital Equipment Corp., but it is uncertain whether they will comply.

SEEING IS BELIEVING

Potential users and vendors expressed interest in 19To but were skeptical of its abilities.

"I'm not sure about this," said Gary Blendinger, a senior support engineer at Digital in Pittsburgh who had just received information about 19To. "I'll have to go over it with our engineers and see if it's viable."

The 19To technique is somewhat similar to a controversial proposal from Bob Bemer, the self-proclaimed father of ASCII, who suggests changing object code to make year values ride "piggyback" on a subroutine somewhere else in an application [CW, Aug. 11].

Other forms of year 2000 remediation, such as "windowing," can be very time-consuming. With windowing, for example, programmers have to go into an application, find all occurrences of two-digit years and determine the proper "pivot" year, or the year before the 21st century is assumed.

A year 2000 analyst at a large petrochemical company in the Northeast who has reviewed the 19To model said he found it difficult to use. "It's got to be simple to use or people will say, 'I don't understand it, I don't want it,' like management did at my company," said the analyst, who requested anonymity.

19TO creator Bill Lappen claims: **The 19TO approach to fixing year 2000-sensitive code "gives users a pretty good patch for another 60 years"**

Lou Marcoccio, an analyst at Gartner Group, Inc. in Stamford, Conn., said the 19To technique "has some problems with it," including difficulties with integration testing later on.

Lappen said that won't be a problem because users don't have to change any source code and the compiler makes date changes automatically.

Then again, the 19To technique might be a savior for information systems managers who are desperately short on time or those who are looking for a quick fix before expanding program date fields to four digits.

"If you don't have to change your code, it's definitely going to cut down your [time] curve," said Jackie Bachenberg, an internal consultant at Equifax, Inc. in Atlanta, who is familiar with 19To.

TIME ELEMENT

But first, vendors such as IBM will have to come out with new compilers to run 19To. And even if that occurs, "it's [still] a time issue," said Lauris Nance, assistant vice president at Equifax.

It typically takes six months or more to build a new compiler, said Mark Stabler, vice president at Computer Associates International, Inc. in Islandia, N.Y.

"You don't just come out with quick compiler changes tomorrow because of the regression testing required against prior coding," Stabler said. □

Correction

In the story "Quality?! What's that?" in the Oct. 13 issue, a paragraph explaining the importance of software engineering disciplines in a recent survey incorrectly stated the scale of importance used by the polling organization, Rubin Systems Inc. in Pound Ridge, N.Y. The scale should have read 1 (highest) to 10 (lowest)

• Unix workstations

SGI results worse than expected; McCracken out, layoffs planned

By Jaikumar Vijayan

THREE YEARS AGO, computers from Silicon Graphics, Inc. made *Jurassic Park* possible. Last week, the question was whether the company was in danger of going the way of the dinosaur.

"It looks like a bit of a train wreck at SGI," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H.

Prompting the concern was news of SGI's deeper-than-anticipated layoffs, the resignation of longtime CEO Ed McCracken and signs that the company's long-promised recovery hasn't been shaping up well.

DEEPER CUTS

Mountain View, Calif.-based SGI last week said it will lay off 700 to 1,000 of its 11,000 employees — almost double what analysts had expected. The moves will result in a $50 million charge for the company. Also leaving is Executive Vice President Gary L. Lauer.

The announcement came on the heels of last week's earnings report, in which SGI posted a loss of $55.5 million on revenue of $768 million for its first quarter of fiscal 1998.

Less than two months ago, McCracken said the company was well on the road to recovery.

Even so, the news wasn't a surprise to analysts who have been predicting that SGI's continuing focus on expensive Unix/RISC workstations in the face of a threat from inexpensive Wintel boxes would lead to problems.

"The senior management keeps getting surprised [by marketing trends], and that is not a good thing. It looks as though [SGI] lost touch with the reality of the marketplace."
– Andrew Allison, editor
"Inside the New Computer Industry" newsletter

"The senior management keeps getting surprised [by market trends], and that is not a good thing. It looks as though [SGI] lost touch with the reality of the marketplace," said Andrew Allison, editor of "Inside the New Computer Industry," a newsletter in Carmel, Calif.

Meanwhile, other Unix workstation vendors such as Hewlett-Packard Co. and Digital Equipment Corp. long ago started shipping Intel Corp.-based Windows NT systems. Sun Microsystems, Inc. also quickly expanded into the high-end Unix servers and the Internet market.

Conversely, "[SGI] didn't recognize the threat represented by NT workstations and hasn't moved quickly enough in transforming themselves, like Sun, from a workstation company to a server company," Allison said.

The result has seen SGI staggering from one weak quarter to the next over the past 18 months, racking up losses in three of the past five quarters. Part of the problems were caused by manufacturing delays and an expensive acquisition last year of Cray Computer Corp., which was supposed to infuse high-end server technology into SGI.

"They simply dropped the ball on execution," said Garden, referring to SGI's manufacturing delays.

SGI last week acknowledged problems with execution but said it will continue with McCracken's recent moves into the commercial server and Wintel market.

TOO LATE?

But analysts fear it may be too little, too late.

For instance, the company late last year announced a line of powerful high-end servers but failed to capitalize on early demand because of manufacturing problems.

And although SGI recently said it plans to start manufacturing Wintel boxes, it won't ship them until late next year.

The delay will further widen the gap between SGI and other former Unix-only vendors. And it could cause users to postpone SGI purchases until the new machines start shipping, analysts said. □

Our Software Secures More Corporate Data Than All Our Competitors Combined.

More clients — including 462 of the Fortune 500 — trust CA security software than all the partial, proprietary solutions offered by IBM/Tivoli, Platinum and Boole & Babbage.

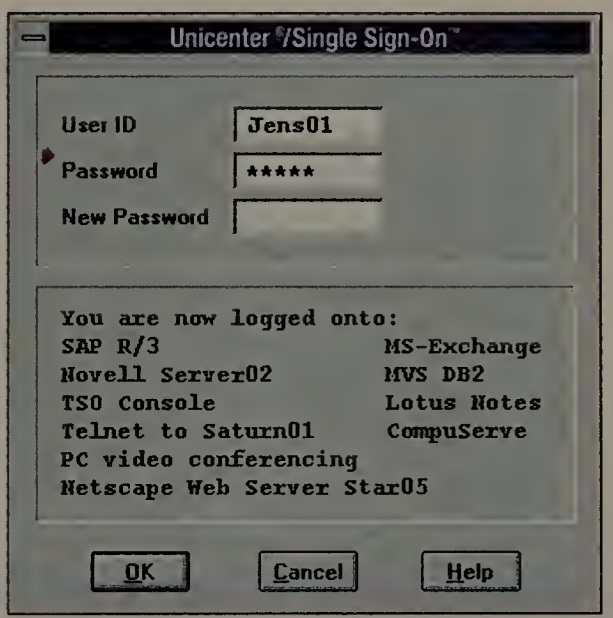
CA Security Software Is #1.

CA holds more security "firsts" than any other vendor. CA was the first to secure IBM's DB2 platform (two years before IBM). CA was the first to identify and address all the security risks of UNIX and NT. And with the introduction of ICE (Internet Commerce Enabled™), CA is the first to make it safe to do business on the Internet.

Unicenter TNG Is The Industry Standard For Network And Systems Management.

Unicenter® TNG™ offers the only integrated solution for true end-to-end enterprise management. With support for every major hardware platform and operating system, Unicenter TNG is open, scalable, extensible and 100% vendor-neutral. In addition, Unicenter TNG offers all kinds of powerful and exciting new features like a real-world, 3-D interface with virtual reality, Business Process Views™ and advanced agent technology.

No other management software offers anything like it.



Single Sign-On lets users use one password and sign on once for every platform.

The Best Feature Of All Is Unicenter TNG Is Shipping Today.

While our competitors are talking about a framework for the "future," Unicenter TNG is a proven software solution that's available today. It's real, it's mission-critical and it's up and running in thousands of sites around the world for some of the smartest clients in the world.

SHIPPING TODAY

Our clients sleep soundly every night knowing that all their IT assets are safely protected by the best security software in the world. Shouldn't you?

For More Information Call 1-888-864-2368 Or Visit www.cai.com

COMPUTER ASSOCIATES®

Software superior by design.

Unicenter® TNG™

©1997 Computer Associates International, Inc., Islandia, NY 11788 7000 All other product names referenced herein are trademarks of their respective companies

Police to track suspects on GTE Internet-based system

By Matt Hamblen

GTE CORP. has entered the crime-busting business with The Bastille, which it claims is the first nationwide interactive, Internet-based information-sharing service for police departments.

"Once police agencies share information, it's amazing what they can do," said David Wilson, a property and computer crimes detective at the Irving, Texas, Police Department.

The Irving Police Department soon will join 10 other law enforcement agencies in northern Texas in a six-month free trial of The Bastille. Specifically, police hope to use the service to share tips on crime patterns and possible suspects and to transmit data, graphics and even video of suspects in real time.

GTE, a $21 billion telecommunications company that offers local telephone connections and wireless, Internet and long-distance service, touts The Bastille as a first.

The FBI has a National Crime Information Center (NCIC), but it is limited to allowing police to check criminal histories on suspects and people with outstanding warrants. Some regional and local police groups share information on gangs and other criminal activities through computer networks with great success [CW, Sept. 1], but those networks aren't national. And the NCIC doesn't operate in real time and isn't expandable, local police said.

NOT LIKE THE MOVIES

"Our eyes were opened wide when we first investigated providing this service ... and found there's no national infrastructure for sharing law enforcement information, even though you see otherwise in the movies," said Brian Plotkin, a GTE manager.

It is unclear whether the network can grow enough to be an asset for police. "It needs to be ubiquitous to work," said Rebecca Wetzel, an analyst at TeleChoice, Inc. in Upton, Mass.

A spokeswoman for the Montgomery County, Md., Police Department said a service such as The Bastille could help investigators fill the gaps in existing police records networks in Maryland and the Washington area.

LOW-PRICED

The service, available nationwide Feb. 1, will cost $199 per month for any department, with a 10% discount for a three-year subscription.

That price is low enough that some small agencies could afford it and be able to tap in to the resources of many larger police departments with only a PC or laptop equipped with a browser, said Jim Balderston, an analyst at Zona Research, Inc. in Redwood City, Calif.

GTE officials said the service will be highly secure with firewalls, encryption and authentication devices from well-known vendors.

Despite the high level of security, Balderston said "nothing is unhackable, and nothing is 100% secure."

The service undoubtedly will raise the eyebrows of privacy advocates who worry about police sharing information on suspects who haven't been convicted of any crimes, Balderston said.

GTE officials said the service provides security that complies with U.S. Department of Justice guidelines for protecting the privacy of suspects. □

Putting the guillotine in GTE's Bastille

VENDOR	PRODUCT
Silicon Graphics	Webforce Origin 2000 and Origin 200 servers
Informix	Universal Server database technology
EMC	Symmetrix storage for photos and graphical images
CyberGuard	CyberGuard Firewall and encryption services
Information Resource Engineering	Safenet encryption

Police hope the system will lead to more arrests

South Carolina uses 'net to keep tabs on convicts

▸ *Project notifies victims of prisoners' actions*

By Tim Ouellette

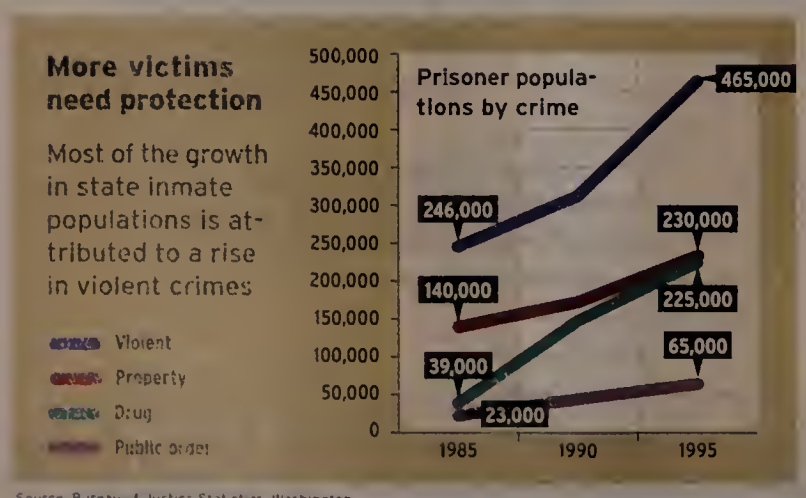
SOUTH CAROLINA is turning to the long arm of the Internet to let crime victims keep tabs on aggressors.

By next March, the state will put the first pieces of its Internet Victim Information System (IVIS) online.

The system uses the Internet to link various state agencies and victim advocacy groups and notifies victims when criminals are about to be released.

About 25 states are installing automated telephone notification systems, according to the National Victims Center in Arlington, Va. South Carolina will take that a step further with its Internet link.

IVIS will replace a system that relies largely on paper shuffling, which leaves the possibility that some of the state's 21,000 prisoners could be released without victims knowing about it.



Source: Bureau of Justice Statistics, Washington

The U.S. Department of Justice estimates that crime costs victims nearly $450 billion per year, including pain, suffering and the loss of quality of life that comes from being fearful of another attack.

An IBM RS/6000 SP and an Oracle Corp. database will anchor the system, which can be accessed by victims, state agencies and victim support groups via World Wide Web browsers. Victims without Internet access can get access through advocacy and support groups.

IVIS also will automatically phone victims with an automated message when prisoners are up for parole, due to be released or are appealing their convictions, for example.

"We have needed this for some time," said Laura Hudson, head of South Carolina's Victim Assistance Network in Columbia. "It has always been the criminal's justice system, since they know what is going on [in the judicial process]. But IVIS is giving more [information] to the victims of crime."

Notifying victims of their attacker's whereabouts has become a hot issue for voters around the country, especially as violent crime continues to rise in many areas (see chart).

IVIS is being developed in response to this summer's passage of South Carolina's victims-rights law. Victims and their families lobbied for notification so they can testify against prisoner releases and steer clear of further contact with criminals.

South Carolina chose IBM's RS/6000 SP, better known as Deep Blue, because there is more than just victim notification on the agenda for IVIS.

"We envision that this will serve as the foundation for a wider computerized criminal justice system, which means it has to be expandable," said Joseph Johnson, project director at the University of South Carolina's Advanced Solutions Group, which is developing IVIS.

The university is building IVIS — expected to cost $200,000 per year — with federal and state grant money.

To provide extra security for the Internet-based system, the state is exploiting the RS/6000 SP's number-crunching prowess to use 128-bit encryption for data transfer and a second level of encryption in the database.

Johnson said he expects to help other states build similar statewide systems based on IVIS in the future. □

Oracle–The Best of Both OLAP Worlds

"Oracle has emerged as the technology leader in online analytical processing (OLAP)."
—ComputerWorld

Query & Reporting — Oracle Discoverer

"Discoverer's intuitive interface makes it a joy to use."
—InfoWorld, May 1997

"Discoverer...outstanding database integration, efficient query engine..."
—PC Week, May 1997

"Discoverer is clearly the best choice among ROLAP tools."
—PC Week, May 1997

Advanced Analysis — Oracle Express

"Flexible and Scalable, Express is head and shoulders above the competition."
—Rudolph Pizzano, President, Roadmap Technologies

"When it comes to analytical power, Express is in a class by itself."
—Teresa Wingfield, Giga Information Group

"Oracle Express is the OLAP market share leader."
—Business Intelligence Ltd.

Oracle provides the most comprehensive family of data analysis tools and applications in the industry, addressing the full spectrum of decision support needs from query, reporting and data navigation to forecasting, modeling, statistics, budgeting, planning and "what-if" analysis. On the Web or client-server against both relational and multidimensional databases. Choose the most scalable, enterprise-wide DSS/OLAP architecture and call Oracle today at 1-800-633-1071, ext.12059 or download from our Web site at http://www.oracle.com/olap/

ORACLE®
Enabling the Information Age™

©1997 Oracle Corporation. All rights reserved. Oracle is a registered trademark and Oracle Discoverer, Express and Enabling the Information Age are trademarks or registered trademarks of Oracle Corporation
All other company and product names are used for identification purposes only, and may be trademarks of their respective owners.

FRANKLY SPEAKING

Managing user expectations

FRANK HAYES

WHAT ARE THE CHANCES your IS shop's next big project will be delivered on time, under budget and exactly to users' expectations?

Pretty grim, grumble the industry analysts.

Meta Group says more than half of all new U.S. software projects will go way over budget. Standish Group says 52.7% of software projects blow their schedule or budget, 31.1% are canceled and only 16.2% are completed on time and on budget.

"How do we keep getting away with this?" *Computerworld* Executive Editor Maryfran Johnson asked a few weeks ago. "No other industry does."

Yeah? Let's check some numbers.

How about sales guys? They're pretty good at turning leads into customers, aren't they? Yeah, right — close to half the time, they get no results at all, according to several sources, including Dan Dunn, associate professor of marketing at Northeastern University in Boston, writing in the journal *Review of Business*. Zero. Bupkis. Wasted effort, no matter how much they spend.

And what about new products? About 40% of the time, new products fail, according to the journal *Research and Technology Management*. They just don't make it. The cost of developing them is money down a rat hole. Worse still, it takes *thousands* of raw ideas to produce one commercially successful new product. No IS shop would ever get away with that many false starts.

This may make you cringe, but IS needs to better market itself.

Matter of fact, with only 31% of projects crashing and burning, IS projects cross the finish line a lot more often than sales leads or new products.

But you don't hear any pundits howling that no other industry gets away with a 40% failure rate like new-product development. Nobody screams that something's got to be done about the horribly high failure rate in sales.

SPIN OF THE WHEEL

Why not? In a word: expectations.

People *expect* sales and product development to fail. Those are highly speculative games, where luck and a good spin of the wheel are all that stand between success and failure.

Sales and new-product guys can improve their odds with hard work, talent and preparation. But everyone knows that a lot of the time, the deal won't close, and the product won't fly.

Software projects are viewed as something more like an assembly line — as if we knew how to build new, unique systems the way we stamp out widgets. Instead of cheering a 69% completion rate, we panic at the 31% failure rate as if it were a quality-control crisis.

How can you reverse that view? How can you get users to understand that systems development today is a gamble — one that may have big payoffs, but is also bound to fail sometimes?

It may make you cringe, but what you need is called "marketing."

Let's face it — we're a little shy when it comes to users. As a result, their understanding of what IS does is even worse than our grasp of what they do. And at a time when we have to rebuild systems on the fly, when business requirements and technology change far faster than we can crank out new systems, that bashfulness translates into unrealistic expectations.

Getting users to understand is tough. Some IS shops actually hire marketing consultants to help them get their message across.

But you don't have to go that far. You can hold internal technology fairs to show off successful systems and help break the ice with users, or do it one-on-one by involving users at every stage of the development process, so they can see what's going on.

That won't make the technical side of development any easier. You'll still have to sweat out the nuts and bolts of building systems, and sometimes you'll still blow the budget or the schedule.

But you'll have a better chance of delivering what users expect. □

Hayes is Computerworld*'s staff columnist. His Internet address is frank_hayes@cw.com.*

SHORTS

Senator, you can't plug in here

Key members of the Senate Rules Committee Thursday told Sen. Michael Enzi (R-Wyo.) that he couldn't use his laptop while in the hallowed Senate chamber. Enzi asked permission to use the laptop to conduct legislative business more efficiently. Some colleagues were at a loss to explain why laptops shouldn't be used in the chamber, but one said the clicking noise would be intolerable. Ironically, the Senate chamber already has four laptop computers that are used by staff.

Emergent to run domain system

The Council of Registrars (CORE) has signed a letter of intent with Emergent Corp. in San Mateo, Calif., to develop and operate a Shared Registry System for Internet domain names. CORE is made up of 73 registrars that would administer the domain name registration system under an agreement signed in Geneva last spring. The National Science Foundation's contract with Network Solutions, Inc. in Reston, Va., to administer domain name registration expires next spring.

Truste seeks Web controls

Internet consortium Truste last week launched a drive to give customers more control over the information that World Wide Web-based businesses collect online. The Palo Alto, Calif.-based group said its Trustmark system has been adopted by few online retailers so far. The group warned that the Federal Trade Commission has threatened to step in if there are no clear signs of industry self-policing by March.

API allows shared Unix/NT apps

Five major hardware vendors last week announced they will support OpenMP, a programming standard that will let applications run on different types of multiprocessing hardware. The industry-standard application programming interface is aimed at developers who write shared-memory applications for Unix or Windows NT. The OpenMP standard was jointly developed by Digital Equipment Corp., IBM, Intel Corp., Silicon Graphics, Inc. and Kuck & Associates, Inc. in Champaign, Ill.

Feds probe IBM sale to Russia

A federal grand jury in Washington is investigating the sale of 16 advanced IBM computers to a Russian nuclear weapons laboratory. At issue is whether the Russian lab evaded U.S. export rules. A spokesman at Russia's Atomic Energy Ministry said Russia bought U.S. supercomputers legally. IBM officials had no comment. The U.S. government must approve computer sales to Russian nuclear weapons facilities, according to State Department officials.

Schmidt: Novell will go it alone

Novell, Inc. CEO Eric Schmidt said the struggling company won't depend on large partners or alliances to expand its business. Speaking to reporters at a press conference in London last week, Schmidt shrugged off rumors of a Novell takeover by IBM, among others. "We are one of the largest software companies in the world. Size does matter, but with our other partners and resellers, we are a huge, huge operation, and I do not see the need for big partners," Schmidt said.

Big Blue stays true

During the stock market fray last week, IBM repurchased $3.5 billion worth of its common stock. The move continues a program by Big Blue to buy back IBM shares in recent quarters. But the recent major purchase also helped show confidence that the pronounced market swings on Wall Street last week won't be long term, especially considering that IBM is a technology bellwether stock, observers said.

Year 2000 tests for net gear

Bell Atlantic Network Integration, Inc. (BANI) last week announced the Network 2000 Assessment Program, an initiative to assess and solve year 2000 problems. Frazer, Pa.-based BANI said it has compiled a database with more than 800 network hardware products that could be affected by the millennium date change. BANI said it uses the data to determine the depth of the problem and to plan for upgrading or replacing noncompliant products to make the network entirely year 2000-compliant.

SHORT TAKES **Unisys Corp.** will train and certify up to 2,000 professionals on enterprise products from Microsoft Corp. as part of a joint initiative. ... **Dell Computer Corp.** plans to announce its version of the NetPC this week, designed to reduce cost of ownership through built-in software and hardware management features. ... **IBM** is shipping Release 2 of its CICS Transaction Server for the OS/390 mainframe operating system, which supports the parallel sysplex clustering scheme. ... **Electronic Data Systems Corp.**'s third-quarter earnings fell 7.4% to $246.8 million but still managed to beat the consensus estimate of analysts by 5 cents per share, according to a poll by First Call Corp. in Boston. ... **Novonyx**, the joint independent start-up formed earlier this year by Novell and Netscape Communications Corp., last week said it would include a full version of Oracle Corp.'s database in its forthcoming Enterprise Pro Server Solution.

"Psst... Wanna Buy Some Time?"

You Need SoftFactory/2000

There's more than one way to buy time – but you gotta know the secret. Word on the street is that SoftFactory/2000™ with SmartFind/2000™ is the only way to go if you are going to get your Y2K projects completed quickly.

TECHNOLOGY

MANPOWER

The SoftFactory/2000 solution is technology-based, requiring less manpower compared to other approaches which are primarily manpower-driven supported by a little technology.

SoftFactory/2000 is so fast and so accurate, it's like buying time between now and the year 2000. That's because SoftFactory/2000 is the only Y2K solution which uses SmartFind, an intelligent problem-solving technology that filters your code to identify only true date fields and only the date occurrences that need to be fixed.

Compare that to other approaches which rely primarily on slow and expensive manpower... assuming you can find qualified people in the first place.

Time is running short, but we can get you to compliance before the year 2000. Call us at 1-800-632-6265 today.

Download the SoftFactory/2000 White Paper from www.microfocus.com/year2000.

BEST OF BYTE PC EXPO '97

Finalist

MICRO FOCUS®

Transforming The Enterprise

© Micro Focus 1997. All rights reserved.
The Micro Focus logo, SoftFactory/2000 and SmartFind/2000 are trademarks and Micro Focus is a registered trademark of Micro Focus Limited.
All other trademarks are property of their respective companies.

Informix to come clean on financials, repricing

By Craig Stedman

IT'S SHOWTIME for Informix Software, Inc. as it tries to get back in the good graces of database users.

The beleaguered vendor this month is expected to finally announce a restatement of its financial results stretching back to 1995.

That will be followed by a promised software repackaging and repricing aimed at simplifying Informix's product lineup [CW, Oct. 13].

Sources said Informix will put its four databases into a single product structure built around a core software engine and a menu of optional add-ons.

That move is expected to reduce the base price of Informix's object-enabled Universal Server technology, which now costs $1,000 more per user than its relational-only software.

The repackaging also reportedly will include an effort to relaunch Universal Server for mainstream uses rather than the multimedia and World Wide Web applications that Informix previously touted.

RIGHT STEP

For users such as Brad Jensen, a vice president at AMR Corp.'s Sabre Group subsidiary in Fort Worth, Texas, Informix finally appears to be getting things right.

"Informix needs to brag about how you can use [Universal Server] for business advantage, not just to make funny Web sites," Jensen said.

REID HORN

"Informix needs to brag about how you can use [Universal Server] for business advantage."

– BRAD JENSEN, SABRE GROUP

Jensen is using Universal Server to develop an object-based data warehouse for AMR's American Airlines unit. Multimedia isn't in the picture at all.

But the ability to store airline planning functions and calculations as database objects should speed up programming and provide "very efficient access to the data," Jensen said.

Universal Server's object technology "applies beautifully to advanced transaction processing," said Janice Richardson, manager of systems and operations for the city of Aurora, Colo. "But Informix flunked basic storytelling, and secrets don't sell."

Price also has been an issue, Richardson said. Universal Server could provide faster performance, "but I don't have the money to do a $1,000-a-user jump on a 300-user license," she said.

Informix, in Menlo Park, Calif., is expected to cut the base price of Universal Server by turning standard multimedia plug-in modules into add-on options. Officials wouldn't comment on the upcoming repackaging. □

Consider it
your secure e-mail
courier service.

Introducing Fabrik Partner Network.™
Secure, Traceable Messaging for the Internet.

Need to exchange confidential documents with your business partners? Tired of the hassles and expense of X.400 or overnight mail? Confused by all the e-mail security options?

With Fabrik Partner Network, you don't have to make complex choices about digital signatures or encryption schemes. And you don't have to install or manage expensive hardware or software.

FPN links your existing e-mail system to your business partners and instantly creates a secure trading circle. Features like message tracking and project-level billing let you decide how to allocate message charges. Use your Internet connection – or create your own private network. With Fabrik Partner Network, the choice is yours.

fabrik
communications, inc.

Call now and try FPN free for the rest of 1997!
800.563.7167 • www.fabrik.com • fpn@fabrik.com

1997 Fabrik Communications, Inc 100 Bush Street, Suite 1100, San Francisco, CA 94104 Fabrik FPN is a trademark of Fabrik Communications, Inc All other trademarks are the property of their respective holders.

Monitors to track frame-relay service levels on WANs

By Patrick Dryden

MANAGERS OF wide-area networks, under pressure to meet service-level agreements for internal users, must make sure they get the best frame-relay service from providers.

Two popular tools that monitor frame-relay WAN performance are being enhanced this week to better track key service-level agreement statistics via a printout, management console or web browser.

NETWORK MANAGEMENT

Concord Communications, Inc. in Marlboro, Mass., will introduce the Service Level Reports option to Network Health, a software suite that analyzes network performance.

Instead of building reports manually, Network Health users will be able to summarize service quality information on a single page for executives, engineers and customers.

And Visual Networks, Inc. in Rockville, Md., will announce an upgrade to Visual UpTime, a hardware and software package that takes the pulse of a WAN at every entry point.

Visual UpTime users will be able to validate service levels over time by measuring and archiving three vital statistics — availability, effective throughput and delay — for both the complete network and individual circuits.

"An objective view of service levels enhances our credibility, inside and out," said Mike Kaltenbaugh, director of enterprise multimedia communications at Columbia Gas System in Reston, Va.

The energy services company started monitoring AT&T Corp.'s frame-relay service a year ago with Visual UpTime. It now has 118 sites under surveillance.

As a result, Kaltenbaugh said his group gets credit internally for proactively detecting slowdowns and publishing WAN uptime numbers. It also gets respect from AT&T for identifying problems accurately.

Concord officials said the company expects to ship the service report option for Network Health next month for $6,000.

Visual Networks plans to upgrade Visual UpTime users for free next month. □

Forte Software, Inc. - Netscape

File Edit View Go Communicator Help

Back Forward Reload Home Search Guide Print Security Stop

Bookmarks Netsite: http://www.forte.com/cw

Internet Lookup New&Cool Netcaster

"We're Forté for the Web!"

Many companies are saying, "We're just like Forté, only for the Web." What they mean is that they're targeting scaleable, reliable, mission-critical applications for the Web. Trouble is, they're talking futures. Meanwhile, Forté customers have *already* developed and deployed robust, component-based Web applications today. Customers like Eli Lilly, HOME Account Network, Mazda, TransCanada Pipelines, Banco do Boston and World Bank, to name just a few. So if you really want Forté power on the Web, the only place to get it is … from Forté.

Click here to see what industry analysts say about Forté or to view our latest Web White Paper. Better yet, sign up for the next Forté seminar in a city near you. Or call 800-622-5076, today.

Because only Forté has what you need to develop enterprise Internet applications, today.

COMPUTERWORLD 1997 HOT 100 COMPANY

FORTÉ

www.forte.com/cw

NETSCAPE Now! 3.0

This site is best viewed with Netscape Navigator. Download Netscape Now!

YOUR SALE IS OVER

Document: Done

©1997 Forté Software, Inc. Forté is a registered trademark and Forté Application Environment and the Forté logo are trademarks of Forté Software, Inc. From outside the US call 510-869-3400. All other trademarks acknowledged.

TRBA

Headhunters stake out Citicorp

▸ *Layoffs prompt outside recruiting frenzy to snatch up good IS workers*

By Julia King

HUNGRY HIGH-TECH headhunters are swooping down on Citicorp's IS operations, even though it is still unclear exactly who is on its hit list of 7,000 workers to be dismissed.

"You're going to find ferocious headhunting firms just jumbling in. I'm sure some of them were already in there before the press release was even typed," said an information systems staffing specialist at a large New York entertainment company.

In the past several days, recruiting calls have been pouring in to workers at Citicorp's technology infrastructure group in New York. One IS manager described the mood there as glum since the company's Oct. 21 announcement that it plans to lay off as many as 9,000 workers. Some of the deepest cuts are expected in IS [CW, Oct. 27].

"In any situation where there's a downsizing or a merger or any significant change, you'll see people become a target," said Alan Johnson, managing director of Johnson Associates, Inc., a compensation consulting firm in New York.

And in the Big Apple, home to hundreds of banks, financial service companies and other big business enterprises with massive IS operations, the competition for Citicorp IS workers will be especially keen given the severe shortage in many information technology labor categories.

How to hang on to IS employees after downsizing

- Communicate to workers how valuable they are
- Award lump-sum bonuses to prove it
- Schedule career conferences and coaching sessions

Source: Technology & Business Integrators, Inc., Woodcliff Lake, N.J.

KEEP THE GOOD ONES

The challenge Citicorp faces now is how to hang on to the IS employees it wants to keep.

More money, Johnson said, would be an excellent opening gambit. The sooner the better.

"After a downsizing announcement, there's no sense in waiting if you're going to make promotions or salary adjustments," he said. Typically, companies offer 5% to 15% increases in base salary to workers they want to keep, he said.

Citicorp spokesman Jack Morris said the bank hasn't yet notified the workers whose jobs will be eliminated as a result of consolidating dozens of back-office computing operations and processing centers. The restructuring will take place over the next 12 to 18 months, he said.

In the meantime, Morris added, Citicorp wants to retain "as many people as we can, if they're willing to undertake retraining and undergo relocation." But he didn't disclose where workers would need to move or what kind of training they would need for continued employment.

Several analysts said they expect a significant number of the announced layoffs to come from overseas.

Citicorp operates in nearly 100 countries, with retail banking operations in 55 of those. Many of those international units also operate IS and back-office facilities, which will be consolidated to cut costs, analysts said. □

Senior Editor Thomas Hoffman contributed to this report.

ONLINE COLLABORATION

IS volunteers get on board Web TRAIN

By Julia King

INFORMATION SYSTEMS manager Gordy Dhatt has been giving his wife's nonprofit agency free technical help for the past 10 years.

Now he wants other IS professionals to do their part.

Dhatt is one of the key drivers behind the Technical Resource and Information Network (TRAIN), a group of IS professionals who volunteer their time and expertise to nonprofit organizations, such as the Spokane, Wash., neighborhood action group where his wife works.

"Nonprofits traditionally do not have IS expertise in-house to solve their problems or the budget to buy it," said Dhatt, who over the years has advised his wife about setting up PCs and networks. He came up with the idea for TRAIN after last summer's presidential summit on volunteerism.

DO WHAT YOU KNOW

"I came to the realization that my own volunteer activities are better aimed at doing what I know how to do and do well rather than dishing up soup," he said. Dhatt works full time at Goodale & Barbieri Cos., a hotel and property management company in Spokane.

Later this month, other IS professionals will be able to register as technical volunteers and trainers at a TRAIN World Wide Web site now being developed free of charge by designers at Aurora Development Group, also in Spokane.

The TRAIN site, which is scheduled for rollout later this month, will be hosted by Aurora at *www.auroradevelopment.com*.

Although the idea to link IS volunteers and nonprofits began in Spokane, "The Web technology is such that it could literally be a global effort."
– Kris Rudin, Aurora project manager

"Part of the objective of TRAIN is to teach people like me exactly what we could do with technology," said Nancy Slack, a TRAIN board member and the marketing and communications director at Spokane's YMCA Inland Northwest.

"We want to get nonprofits to a point where, if someone came in and set up a Web page, we'd be able to continuously keep it current," Slack said.

To register, computer professionals will enter their skills, contact information and how many hours a week or month they can donate into a Web-based database. Nonprofit groups also will register at the site.

"Eventually, we'll also put together back-end software that will allow matches between volunteers and nonprofits to be made automatically," said Aurora project manager Kris Rudin.

An electronic chat room and electronic-mail archiving capabilities also are in the works so that TRAIN members can send memos and convene as a group electronically rather than meet in a physical place. □

Manufacturers turn to 'net for improved supply chain

By Randy Weston

MANUFACTURING hasn't been considered cutting-edge since the days of Henry Ford's assembly line. But some manufacturers are bucking that tradition and turning to the Internet to improve the supply chain that connects customers and suppliers.

They are finding Internet technology an easy-to-use supplement to costly electronic data interchange (EDI) systems or infrastructure upgrades.

For example, Mott's North America, Inc. in Stamford, Conn., is using new Internet applications from SAP AG to extend its R/3 enterprise resource planning software system to customers who now can view the status of orders from a World Wide Web browser.

GOING ALL THE WAY

"We have full EDI partners and have had for years, but this allows us to open it up full bore," said Catherine Riordan, director of business solutions at the food processing company.

"We are looking at using it for smaller partners who can't go EDI" because of the cost and complexity, she said. "We are also looking at taking it to our purchasing and supply side to start placing our orders and to manage our supply chain over the Internet."

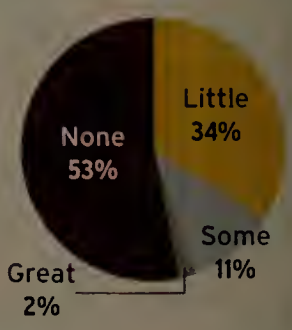
Analysts predicted that more and more manufacturers are going to turn to the Internet for real-time data interchanges with suppliers and customers as competition forces them to adopt more of a make-to-order model.

For now, many are reluctant to adopt the technology. In a survey of 253 midsize manufacturing companies by Grant Thornton LLP in Chicago, 53% said the Internet had no impact on their business, and 34% said it had little impact.

"Most companies still see information and software as the enterprise," said Richard Mathieu, associate professor of information systems at the University of North Carolina in Wilmington. "But every business partner is a part of [a manufacturer's] enterprise."

But not all manufacturers are hanging back. Vixel Corp., a Bothell, Wash., maker of Fibre Channel storage products, has grand visions for using the Internet across all its operations.

The impact of the Internet on midsize manufacturing firms



Base: 253 owners of or executives at companies with sales between $10 million and $500 million

Source: Grant Thornton LLP, Chicago

It is setting up extranets to link its suite of Oracle Corp. applications with customer applications.

"We want to collapse the supply chain as much as possible," said Don Wenninger, Vixel's chief information officer.

With the previous system, if one of those manufacturers had a problem getting a part, it took up to two weeks for Vixel to be able to notify the customer of a change in delivery date. Now, that parts problem is immediately translated into a new delivery date that is sent directly to the customer. □

OUR NICS HAVE NEVER MET A SYSTEM THEY DIDN'T LIKE.

Compaq NICs for each and every environment:

	10BaseT	10/100TX	Token Ring	FDDI
PCI	•	•	•	•
ISA	•		•	
EISA	•	•	•	•
PC card	•	•	•	

Regardless of the network you have–be it Fast Ethernet, Ethernet, Token Ring or FDDI–you'll find an affordable Compaq Netelligent NIC with up-to-the-minute technology that will maximize your performance and efficiency.

Since Compaq sells more PCs and servers than any one else on the planet, it may not surprise you that we sell over one-third of all the installed-server NICs in North America. Whichever NIC you need, Compaq has you covered. Our NICs support every major operating system and every major bus type.

And because they've been thoroughly tested for compatibility on popular open platforms, all deliver ease of integration and high performance. What's more, each offering reflects the very latest advances, such as Adaptive Performance Optimization in our Fast Ethernet NICs, redundant server support in our FDDI NICs and Scalable Clock Architecture in our Token Ring NICs.

In the end, you'll be hard pressed to find a group of NICs that are as comprehensive and innovative. Or for that matter, as friendly.

For more information about the entire family of Compaq Netelligent products, visit us at www.compaq.com/products/networking/ or call 1-888-556-5541. Compaq. The world's leading computer seller.

COMPAQ

© 1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. Netelligent is a trademark of Compaq Computer Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies.

Java developers keep faith despite vendor war

By Sharon Gaudin and April Jacobs

SOME DEVELOPERS building shrink-wrapped Java applications say they are nervous but will forge ahead despite the war between Microsoft Corp. and Sun Microsystems, Inc. that threatens to derail Java's platform-independence.

In the wake of Sun's breach-of-contract lawsuit against Microsoft filed Oct. 6 and Microsoft's countersuit filed last week, independent software vendors say they are reeling from watching the battle.

But users said once the dust settles, they will keep developing Java-based applications.

"There's too much value with Java. We can't just pitch it," said Shaun Maine, chief operating officer and president of Sanga International, Inc., a Barbados-based 100% Pure Java program developer that specializes in the finance and telecommunications industries. "We're telling our users not to go with Internet Explorer. We just tell them we don't want to get involved in that game."

STEVE BORNS

Red Storm's Kevin Perry:

"[Java] makes anybody using it professionally nervous because it's so unknown"

He said if users go with Netscape Communications Corp.'s Navigator, they won't have to worry about being able to run Java applications.

In its suit, Microsoft charged Sun with breach of contract related to Sun's licensing of its Java programming language.

Sun claims that Microsoft's version of Java in the latest version of its Internet Explorer browser doesn't comply with Sun's Java standard. Microsoft now says Sun didn't deliver promised Java technology.

Regardless of who wins the spitting match, Java developers and users are left wondering if their supposedly write-once, run-anywhere applications will run the same on Navigator as they do on Internet Explorer.

"Java is a new technology, and it makes anybody using it professionally nervous because it's so unknown," said Kevin Perry, producer of author Tom Clancy's online company Red Storm Entertainment, Inc. in Morrisville, N.C.

ANXIOUS MOMENTS

"When you add in the infighting, it makes it even more of an unstable platform. Unfortunately, we're not in a position to be able to pull back. We don't have the resources to just hang out until they finish this fight. We have to move forward into an unstable environment," he said.

Perry said Red Storm has several online business ventures in the planning stages and will think them through carefully before plunging ahead. "[Internet Explorer 4.0] has definitely caused us some anxious moments," he said.

Malcolm Colton, vice president of marketing at Cloudscape, Inc., an Oakland, Calif., Java software developer, said there is no way he will back off from building Java applications.

"Java is destined to be the next great development platform," Colton said. "We're completely committed to it. Worst case for us is it splits Java into two platforms, and that's still way better than the existing situation." □

Sun said, Microsoft said

Q: What happened last week?
A: Denying charges that it violated its Java license agreement with Sun, Microsoft asked the U.S. District Court to dismiss the lawsuit Sun filed Oct. 6. Microsoft also countersued Sun for breach of contract; breach of covenant of good faith and fair dealing; and unfair competition.
Q: What are Microsoft's chief claims against Sun?
A: Sun failed to deliver Java test suites and backward-compatible Java upgrades; give Microsoft all upgrades and betas; and notify Microsoft of planned modifications to Java. Sun made false claims that all Java licensees are subject to similar terms and that Microsoft's software development tools and Internet Explorer browser are "incompatible."
Q: What has Microsoft asked the court to do?
A: Declare Sun in breach of contract; confirm Microsoft's right to terminate Sun's licenses to Microsoft Java technology; and grant Microsoft unspecified damages.
Q: What is Sun's response to the countersuit?
A: "Microsoft's countersuit is standard operating procedure. You might even call it your garden-variety legal tactic," a company spokeswoman said. — Carol Sliwa

As expected, Microsoft countersues Sun

By Carol Sliwa

IT WILL BE at least a month before a federal judge might be in a position to rule on the U.S. Justice Department's anticompetitive complaints against Microsoft Corp.

The Redmond, Wash.-based company has until next Monday to respond formally to Justice Department charges that it violated a 1995 consent decree by requiring PC makers to license and distribute its Internet Explorer browser as a condition of licensing Windows 95.

The Justice Department then will have 10 days to answer Microsoft's response.

The parties are due back in court Dec. 5, at which time a federal judge will decide how the case will proceed.

PRIOR KNOWLEDGE?

Microsoft's initial memorandum, filed last week with the court, states that the Justice Department had full knowledge "more than *two* years ago" that Microsoft was incorporating Internet browsing technology into Windows.

According to Microsoft, the Justice Department didn't dispute Microsoft's right to design its operating systems to include Internet browsing functionality, and the consent decree doesn't specifically bar Microsoft from developing integrated products.

Justice Department officials declined to comment on Microsoft's response.

But they have made known their view that the result — Internet Explorer/Windows 95 — isn't an integrated product, despite Microsoft's claims to the contrary.

To support its claim that Internet Explorer and Windows 95 are two separate products, the department points to evidence showing that Microsoft separately markets, licenses and distributes each version of Internet Explorer in ways different from any integrated features of its operating system products.

There is separate OEM and end-user demand for Internet browser products and for Windows 95, and the two products can be physically and commercially separated, the Justice Department said in documents filed with the court.

A Microsoft spokesman said marketing information is "a pretty superficial way" to determine if the product is integrated into the operating system.

"Anyone who looks at the code will conclude that Internet Explorer makes fundamental modifications and extensions to the core functionality of the operating system," the spokesman said. □

RELATEDLINKS

For these and other related links, point your browser at:
www.computerworld.com/links/971103dojlinks.html

- **Microsoft and the DOJ**
  www.findlaw.com/01topics/01antitrust/microsoft.html
- **Software Industry Issues: Antitrust**
  www.webcom.com/software/issues/osii-at.html
- **Microsoft Antitrust Page**
  www.essential.org/antitrust/microsoft/microsoft.html#ms

Sun staggers, OMC makes haste through ISO approval process

By Sharon Gaudin

SUN MICROSYSTEMS, INC. and the Object Management Group are wending their way through the International Standards Organization (ISO) standardization process. But the OMG is moving at lightning speed compared with Sun.

Sun, which is trying to become the sole submitter for Java language standardization, suffered a setback last week when the U.S. contingent voted against it.

The matter is far from settled, however. Twenty-seven countries have a vote. Six, including Denmark, France and Sweden, have approved Sun's application. The other countries have two weeks to submit their vote.

Sun's Java rival, Microsoft Corp. hailed the U.S. vote, saying that Sun is trying to monopolize the increasingly popular development language. Microsoft said an impartial organization should control Java's standards process.

"Standards are a good thing all the way around, especially in the early stages of Java," said Dennis Kremer, a programmer at Pittsburgh-based package shipper RPS, Inc.

"It would be nice to be sure things you're developing will be standard, with all the inconsistencies in Java virtual machines. Microsoft is making things more complicated," he said.

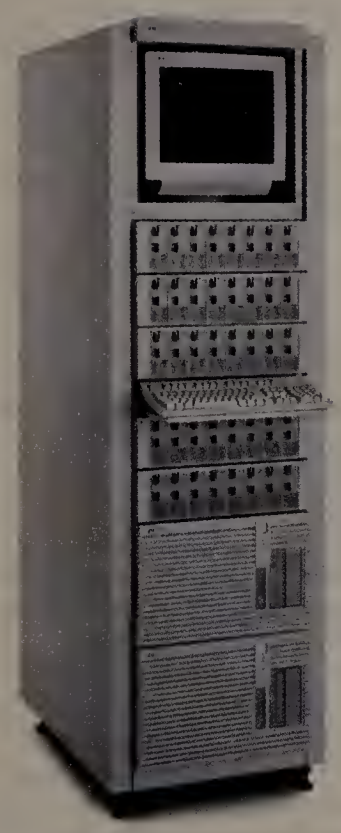
Kremer said he is glad the OMG, a Framingham, Mass.-based group of Common Object Request Broker Architecture vendors and users, is sailing through the ISO process.

Richard Soley, chairman and CEO of the OMG, said results of the first vote from member countries came through late last Thursday.

Sixteen countries approved the application, two approved it with comments, and two denied it with comments. Adding comments means once those questions are answered, the vote can be changed to an approval.

Soley said the comments, which he saw in draft form, have already been answered. □

NEW PRODUCT



intel inside
PENTIUM PRO PROCESSOR

The New HP NetServer LXr Pro and Rack Solution

Intel 200 MHz Pentium® Pro processor with 512KB cache and up to four-way multiprocessing
Also available in 1MB cache versions
HP NetRAID PCI Disk Array Controller with three Ultra SCSI channels,
connects up to eight drives per channel
Up to 10 I/O slots: six bus master PCI, four EISA (one EISA slot reserved for system)
LAN Support and Comprehensive Network Support available as HP SupportPack
128MB/512MB ECC memory expandable to 4GB
Three hot-swap Redundant Power Supply standard

Fastest four-way.* Over 1TB of storage.

Let's get ready to Rack.

www.hpresource.com/racks

*Based on TPC-C™ benchmark results of 10,505 tpmC at $48.72 per tpmC released August 18, 1997. The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. ©1997 Hewlett-Packard Company

HEWLETT® PACKARD

Who's minding the database?

Dearth of administrators forces companies to bring in consultants

By Craig Stedman

A SHORTAGE of skilled database administrators is forcing companies to bring in high-priced consultants or put off work while they search for warm bodies to fill jobs.

Like the application developers and programmers they work hand-in-hand with, database administrators are in short supply and have ample opportunities to jump at higher-paying offers.

"We're competing with Silicon Valley [vendors] for resources, and we just can't get resumes in here."

— Bruce Watson, The Gap

But their shortage can be even harder to take because databases have to be tended to day in and day out, leaving information systems managers with little breathing room when a database administrator hits the road.

For example, The Gap, Inc. had to turn to outside contractors to help do normal maintenance work on its production databases after a slew of its 11 database administrators defected this year.

"That's something we've never done in the past," said Bruce Watson, senior director of information administration at the San Francisco-based clothing retailer. "But it's the only way we can cover everything the way we have to." The contractors cost $125 to $200 per hour, he added.

Watson said it has taken The Gap about 90 days to fill database administrator openings, despite combined salary/bonus offers that range from $100,000 to $125,000.

"We're competing with Silicon Valley [vendors] for resources, and we just can't get resumes in here," he said.

The company now is considering training junior-level staff members to fill database administrator slots.

But turning to internal training usually doesn't keep information systems departments from running up their database administrator consulting tabs, said Sandy Laufer, an analyst at Gartner Group, Inc. in Stamford, Conn.

"Even though it takes money out of your wallet, the only thing you really can do is bite the bullet on consulting dollars to help your people over the rough spots," Laufer said.

The need to have the consultants on hand should eventually diminish, "but they do tend to stay there for a long time," she said.

Database development work and performance tuning for the city of Aurora, Colo., ground to a halt for nearly four months when the database administrator who managed the city's Informix Software, Inc. databases left, said Janice Richardson, manager of Aurora's systems and operations division.

"Essentially, nothing new got done," Richardson said. "We just maintained the databases."

With new hardware sitting idle and applications waiting to be set up, she called in an Informix consultant to work for a month at a government discount rate of $200 per hour. "Projects were starting to get delayed," she said.

Even worse, the long search for a skilled database administrator didn't turn up any suitable prospects.

Richardson eventually decided to train an existing city employee, another four-month process that is still under way.

"There are still gaps in his knowledge, so I have to pick things up for him," she said. "It's not a great situation, but it's what we have to face." □

KEEP 'EM ON THE FARM

Techniques to find and keep database administrators

- Pay up-front hiring bonuses
- Give extra pay for being on call
- Award time off for nighttime call-ins
- Offer extra vacation and flexible hours
- Provide advanced technology and tools

Source: Gartner Group, Inc., Stamford, Conn.

Business chat gaining favor in Corporate America

CONTINUED FROM COVER 1

communicate in real time: The recipient can see the sender typing in the message. Workers can use it to get information fast from colleagues, thanks to "buddy lists" that let them know when their peers are online.

Beyond corporate boundaries, chat gives companies a way to "talk" to customers and trading partners without the expense of telephone calls or face-to-face meetings.

"This could be useful if you want to have a sales meeting but don't want to fly people to a central location," said Aaron Wiltz, a technical analyst at McDonald's Corp. in Oak Brook, Ill.

Electronic mail does that, too, but not in real time. E-mail is usually handled in store-and-forward fashion, which means mail goes to a "post office" and is redirected to the addressee. That could take five to 10 minutes, whereas chat is instantaneous. And in certain markets, such as online trading and online shopping, real-time dialogue makes a difference (see story, Cover 1).

Business chat is most commonly used as part of a World Wide Web-based customer service system or with electronic-commerce applications, said Kate Doyle, an analyst at Jupiter Communications, Inc. in New York. "Chat can spur commerce because customers can get answers to questions they have about products while online," she said. It also can foster better client relationships and help companies market products, Doyle said. She predicts that 30% of the online population will use chat by 2002.

Until now, chat has been viewed by most as a complement to E-mail and groupware, not a replacement. Pushing chat more directly into the corporate spotlight are announcements this week from Lotus Development Corp. and Oracle Corp.. Both companies are expected to reveal plans to bundle Ichat, Inc.'s technology with their messaging servers, which are due by year's end.

NO HASSLES

Qualcomm, Inc. also plans to bundle Ichat's software in its popular Internet mail client. Officials at EShare Technologies, Inc. in Commack, N.Y., said it also is talking with messaging vendors about possible bundles.

Users like that chat delivers basic collaboration without the overhead and integration hassles associated with full-fledged groupware systems such as Notes. Generally, no special client software is needed for chat. Users can participate via a Web browser with a plug-in.

It is a better alternative than E-mail, not only because it is real time, but also because chat can be limited to communities of people who want to work together. Anybody can access E-mail in-boxes.

"I think we regained our investment in about a week," said Tony Nunes, director of technical services at Pristine Capital Management in White Plains, N.Y.

The company runs a virtual trading room on the Web using software from Houston-based Ichat. Pristine charges about $500 per month for the service, which gives subscribers access to real-time trading tips, commentary and questions and answers. Nunes said chat is better than E-mail for that purpose because "seconds count in the stock market."

"There is an immediacy that is lost on E-mail," said Bruce Ekstein, director of promotion research at MCA Records in Universal City, Calif. The company will supplement its Microsoft Corp. Exchange network with chat software to improve the flow of information at the company. "Sometimes people don't read their E-mail for days," he said.

In the case of Mail Boxes Etc., chat ensures that franchise owners can participate in meetings and distance learning provided by the home office, as long as they have a browser.

If the company tried to do something similar using its Lotus CC:Mail network, it couldn't be assured that all its store owners could participate, said Donn Hopkins, the company's webmaster. □

THREE WAYS TO COLLABORATE

	Chat	E-mail	Groupware
Pro	• Real time • Works with E-mail • Tells you when co-workers are online	• Supports multimedia messages • Good interoperability due to established E-mail standards	• High-level collaboration
Con	• No chat standards (interoperability among products isn't guaranteed) • Some users complain of being bombarded with messages	• Not real time • Doesn't tell you when co-workers are online	• Expensive to develop and manage • Often proprietary

51 Issues for $39.95

Save over 73%

Yes, I want to receive my own copy of COMPUTERWORLD each week.
I accept your offer of $39.95* per year - a savings of over 73% off the single copy price.

First Name MI Last Name

Title Company E-mail address

Address City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew

Single copy price: $3.00/issue

* U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)

10. Manufacturar (other than computer)
20. Finence/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/ Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturar of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgr., Tech Planning, Admin Svs.
23. Dir./Mgr. Sys. Development, Sys. Architectura
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Mktg. Manegement
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems

(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No
Intranet Products ❑ Yes ❑ No

COMPUTERWORLD

B2L7 V

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144

Dell, HP target corporate users with thinner, lighter laptops

▸ *New models due this month feature 233-MHz Pentium*

By Kim Girard

THIS MONTH users will be able to get their hands on two more thinner and lighter corporate laptops — packed with the new 233-MHz Pentium processor — from Dell Computer Corp. and Hewlett-Packard Co.

LAPTOP LINEUP

Product	Price
Dell Latitude CP notebook	$3,499 to $4,699
Hewlett-Packard OmniBook 3000 CT	$3,700 to $4,800
Digital HiNote VP 700	$3,799 to $4,999

Features of all three

- 13.3-in. display
- 233-MHz Pentium processor
- 6 to 7 pounds
- 2.1G-byte to 4G-byte hard drive

Round Rock, Texas-based Dell today introduced its Latitude CP line, and Palo Alto, Calif.-based HP will roll out its OmniBook 3000 CTX series. Both models target corporate users and cost less than $4,700.

The Latitude design is just 1.5 inches thick: Dell shaved an inch and two pounds off the old model. The notebook has a 13.3-in. active-matrix LCD screen, a 2.1G-byte hard drive and a second bay for batteries, allowing six to eight hours of continuous use.

MMX TO GO

HP, which is trying to boost its presence in the laptop market with a redesigned product line and pricing strategy, is offering the 6.8-pound OmniBook 3000 CTX with a Pentium MMX processor.

HP's 233-MHz model comes with a 4G-byte hard drive and 32M bytes of memory. It costs $4,700; the 200-MHz version with a 2.1G-byte hard drive costs $3,700.

"The pricing's not bad at all," said Jerry Filler, an information systems manager in computer operations at Progressive Insurance Corp. in Mayfield Village, Ohio, who has a beta copy of the new HP notebook.

The company's insurance adjusters use HP 5700 and 5500 notebooks because of their high-contrast screen display, but company executives carry Dell's Latitude machines.

Analysts said HP is focused on improving its laptop product.

"Before, full-size notebooks were an afterthought for them," said Mike McGuire, an analyst at Dataquest in San Jose, Calif. Now the company is trying to make inroads with a separate mobile business, he said.

Also this week, Digital Equipment Corp. is rounding out its laptop product line with the HiNote VP700 series, which has a 233-MHz Pentium processor and CD-ROM/diskette combination drive.

The VP700 falls between the company's higher-end Ultra 2000 series and VP500 value series.

The VP735 has a 13.3-in. color screen and a 4G-byte hard drive. The VP715 has a 2.1G-byte hard drive.

The 166-MHz model costs $3,799; the 233-MHz machine costs $4,999. □

& **Users expect to see a business version of Apple Computer, Inc.'s EMate. Page 63**

WASHINGTON, D.C.

Washington, D.C. Convention Center
The Renaissance Washington D.C. Hotel

Conference: January 26-29, 1998
Exhibition: January 27-29, 1998

ATTEND COMNET'S 20TH ANNIVERSARY EVENT

Be A Part of History — And The Future

Broadband. Wireless. Internet, Intranets, Extranets. Push and pull technologies. There's unparalleled opportunity in the communications and networking technologies now gaining in sophistication. And momentum.

ComNet's 20th Anniversary Conference and Exhibition — *The Enterprise Network: Front and Center* — gives you the unparalleled opportunity. Whether you're a builder, buyer, planner, or manager of an enterprise network.

Immerse yourself in 9 information-packed conference tracks. Listen to a distinguished cadre of speakers including 3Com's Chairman & CEO, **Eric Benhamou**, Marimba Inc.'s President & CEO, **Kim Polese** and Bell Atlantic's Vice Chairman, President & COO, **Ivan Seidenberg**. Join **Vinton Cerf**, the father of the Internet, and ethernet inventor and Internet contrarian **Bob Metcalfe** as they square off in a lively discussion, moderated by **Stewart Alsop**, about the Internet's future and what that future will mean to you. And accompany 50,000 of your colleagues to view over 500 exhibiting companies at the #1 show for new product launches.

◆ **#1 Show For New Product Introductions**

◆ **9 Targeted Conference Tracks**
Network Management and Design • Switching Tools/Technologies/Strategies • Collaborative Networking • The New WAN • Enterprise Intranets • Network Reliability/Performance • Remote Network Access and Security • Global Telecomm: Issues and Answers • Open Forum

◆ **Intranet Village** *(co-sponsored by Network World and Vertical Networks)*
A gathering of companies with products to help you design, build and manage your Intranet.

For general event information visit our Web site at www.comnetexpo.com or call 800-545-EXPO.

Media Sponsors:
NetworkWorld (Flagship Sponsor) · CMP INTERNETWEEK · CMP INFORMATIONWEEK · CMP NETWORK COMPUTING · PCWEEK · FEDERAL COMPUTER WEEK · ASAP · Forbes · Forbes · WORLD

20th Anniversary Sponsors: IBM · ascom Timeplex

Sponsor: The George Washington University

Keynote Speakers — *Leaders in the Communications Networking Industry*

Eric Benhamou *Chairman & CEO, 3Com Corporation*

Kim Polese *President & CEO, Marimba, Inc.*

Ivan Seidenberg *Vice Chairman, President & COO, Bell Atlantic*

Plus...

Vinton Cerf *Senior Vice President, Internet Architecture & Engineering, MCI Communications Corp.*

Francis Dzubek *President & CEO, Communications Network Architects Inc.*

John Gallant *Editor-in-Chief Network World*

Bob Metcalfe, *Vice President, Technology, IDG*

Richard Wiley, Esq. *Partner, Wiley, Rein & Fielding*

20th Anniversary

Owned & Produced by: IDG WORLD EXPO

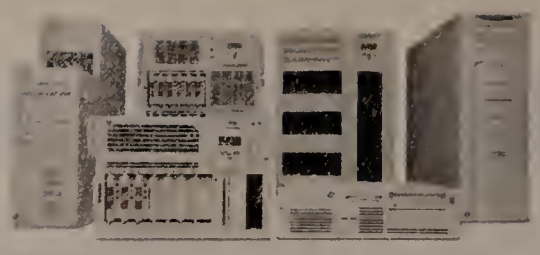
Managed by: IDG EXPO MANAGEMENT COMPANY

Please send me more information about ComNet's 20th Anniversary Conference and Exhibition.

❑ Attending ❑ Exhibiting CPP

Name _____
Title _____
Company _____
Address _____
City _____
State _____ Zip _____
Phone _____
Fax _____
email _____

Fax to: 781-440-0357. Or Mail to: ComNet '98, 1400 Providence Highway, P.O. Box 9127, Norwood, MA 02062.
THIS IS NOT A REGISTRATION FORM.



Presenting our new expanded line of servers. Each day more and more companies realize the power and advantages of running their operations with Compaq servers.

Today, over one million Compaq servers are in operation. As the need for this more efficient and intelligent form of computing has expanded, our line of servers has expanded to meet every demand. The ProSignia 200 is our entry-level server, which your business can buy for the price of a desktop.

For workgroups, we offer the ProLiant 800 and the new 850R, which is the first high-density, rack-ready workgroup server.

Moving up the organization, we offer the scalable and flexible ProLiant 2500 for departments and the ProLiant 6000, which delivers excellent price performance for midrange enterprises.

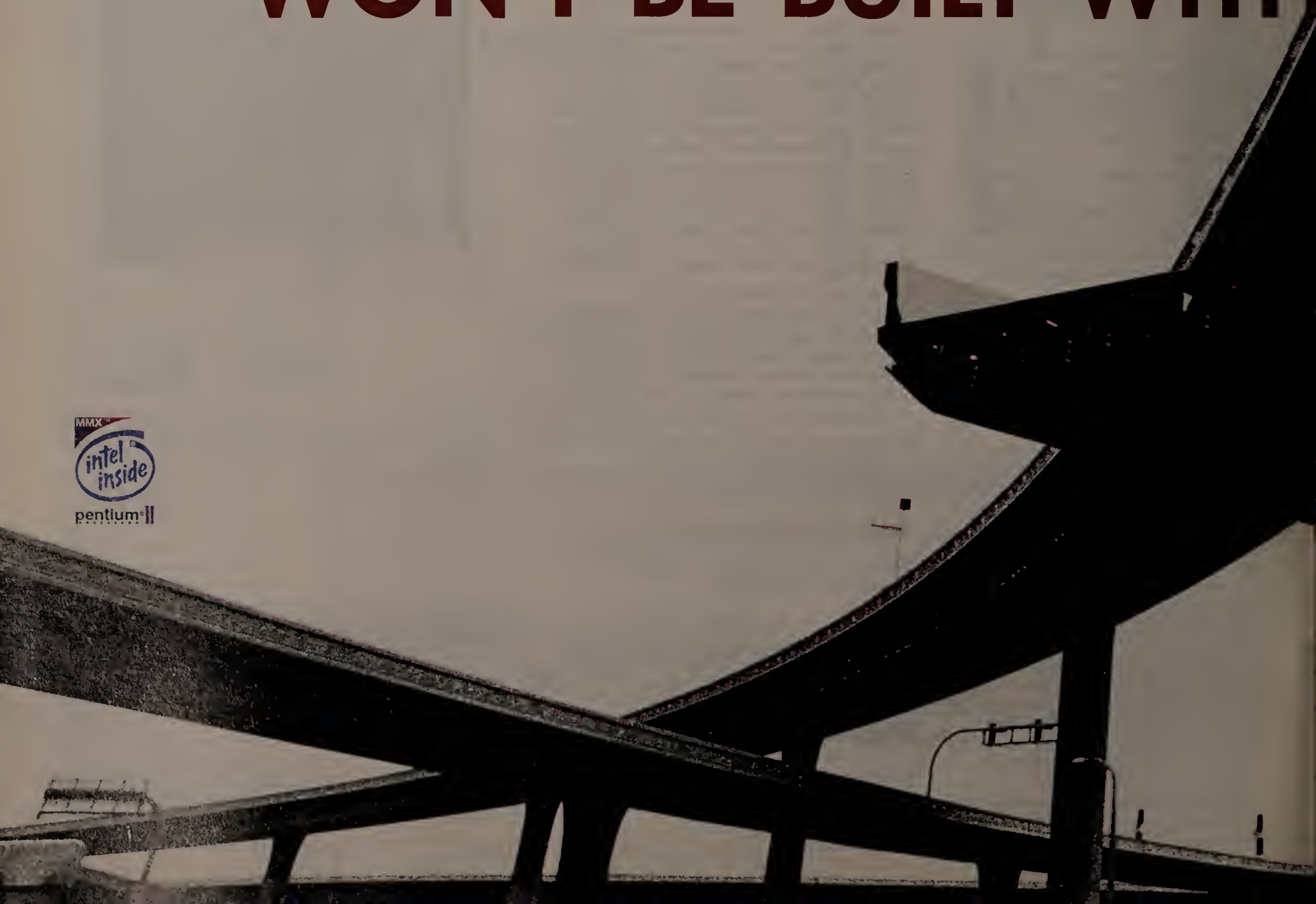
The ProLiant 6500 and 7000 are the newest scalable additions to our line and establish solid enterprise capabilities. Each offers the highest levels of availability for 7x 24 computing.

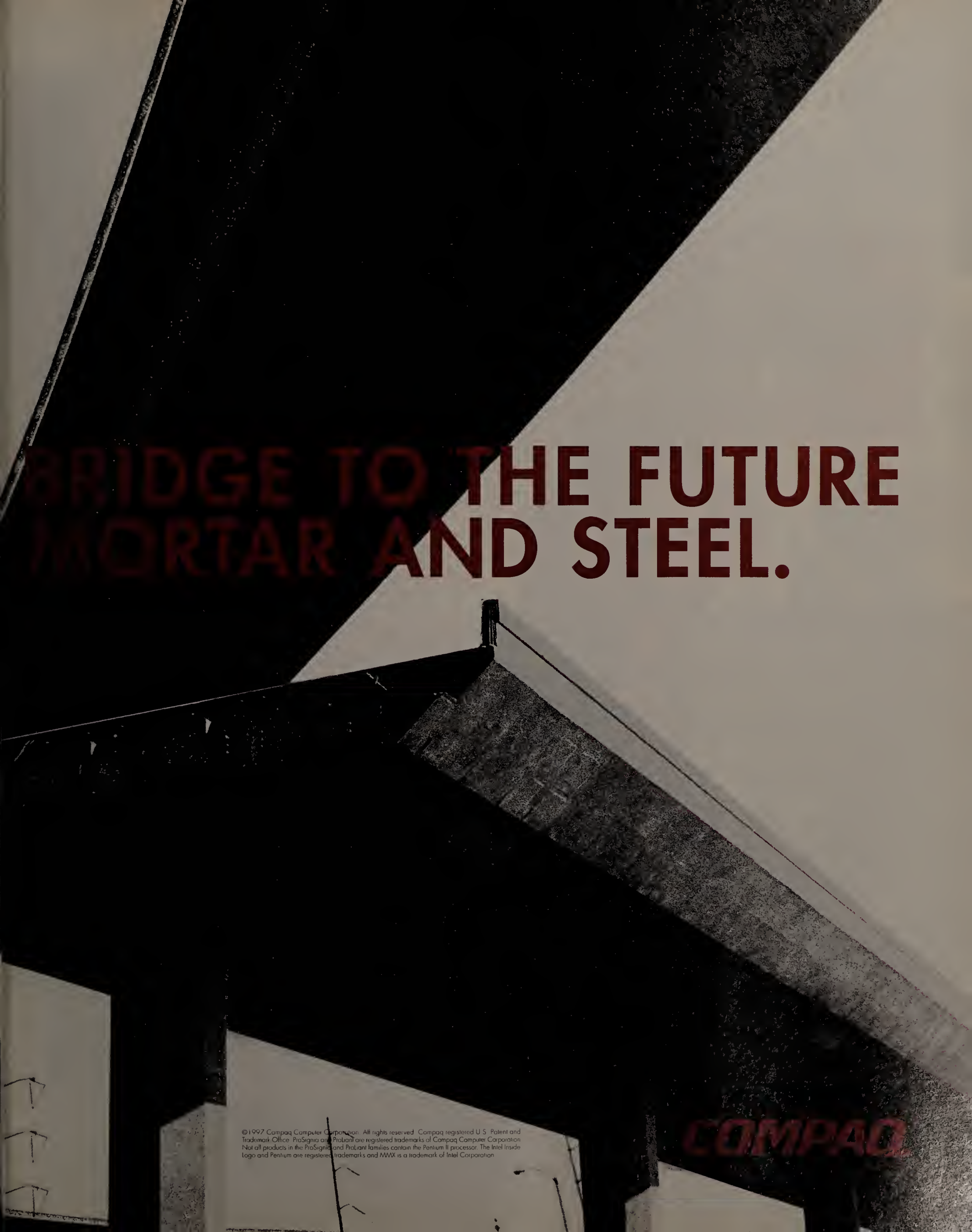
From the very beginning, Compaq servers have set the standard for open systems computing. Today, Compaq management software allows companies to keep networks up and running and costs down.

The days of having to run your business only on the big, expensive iron are over. The future with Compaq is a wide open, newly paved superhighway just begging to be travelled.

www.compaq.com/products/servers

THE GREAT TECHNOLOGY WON'T BE BUILT WITH





©1997 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. ProSignia and ProLiant are registered trademarks of Compaq Computer Corporation. Not all products in the ProSignia and ProLiant families contain the Pentium II processor. The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation.

Central storage cuts costs

By Tim Ouellette

IT DEPARTMENTS are hoping to turn their disk subsystems into veritable data melting pots.

In the coming months, major storage vendors expect to expand the number of server platforms they support on one disk array, so users can centrally locate data from different servers — such as mainframes, AS/400, Unix and Windows NT — in one box.

Most information technology managers have already seen an influx of distributed servers back to the data center. They say centralizing corporate data on fewer and more accessible disk systems is the next step [CW, Aug. 11].

"That is what we would eventually like to do," said Art Louise, assistant vice president at Group Health, Inc. in New York. "We want to move some mainframe applications to open systems, but let them keep sharing the data."

By co-hosting data, IT managers also expect to save floor space; get a better grasp of storage-capacity planning; improve management; and get more efficient use of their staff, analysts said.

Using just one box for storage is one of the first steps to true data sharing, said Linnea Nichols, a data center branch manager for Fairfax County, Va. Nichols heads up a committee of Share, IBM's mainframe user group, that is asking vendors to make storage transparent to end users.

"It is a way of not only cutting management costs, but of having more flexibility to respond to changing capacity needs of our various platforms," Nichols said.

The problem is that many enterprise applications need data from several different sources, which requires time-consuming data transfers among platforms and gives storage administrators a management headache (see chart).

Managers complained that their file transfers over the network suck up significant amounts of valuable mainframe MIPS.

To address this, Gulf States Toyota in Houston is using Encore Computer Corp.'s Infinity SP array to store and backup mainframe, Unix and Windows NT data.

Data sharing "basically saves all the hassle of automating file transfers between different servers and their storage systems," said Bob Lane, director of information services at the automobile distributor.

Although EMC Corp. in Hopkinton, Mass., and Encore, in Fort Lauderdale, Fla., currently lead the pack in co-hosting data, more vendors are picking up their pace.

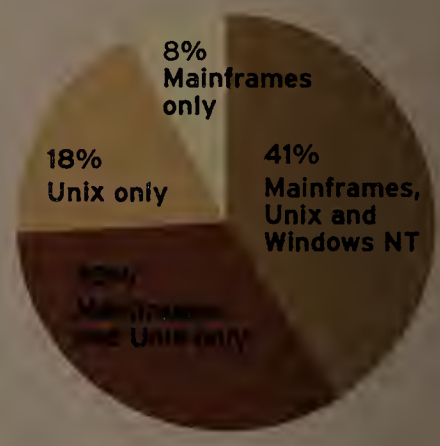
IBM plans to announce native support for Sun Microsystems, Inc.'s Solaris operating system on its 7133 Unix disk arrays. And IBM is developing a version of the 7133 that will also store mainframe data. That system is expected to ship late next year.

By year's end, rival Hitachi Data Systems Corp. in Santa Clara, Calif., plans to add support for Windows NT data to its 7700 arrays, which already can store mainframe and Unix data.

And Sun, in Mountain View, Calif., plans to expand its platform support beyond Solaris by buying Encore's storage business. The deal, which should be sealed in the next month, will let Sun host mainframe data on a future line of disk arrays.

DATA JAMBALAYA

IS managers want to consolidate storage because most are collecting information from numerous platforms when building enterprise applications:



Base: 700 IS managers

Source: Find/SVP, New York City

But the road to data sharing doesn't end by putting all the data under one roof (see story below).

That's because the data from different types of servers is partitioned within these arrays. Some high-speed data transfer is still taking place, although it is over internal data channels instead of the corporate networks. And natively reading the data still requires a compatible server on the front end.

Although co-hosting storage addresses one piece of true data sharing, data transfer schemes and software access must continue to improve, according to a report by John Young, an analyst at The Clipper Group, Inc. in Wellesley, Mass. □

Not just a storage thing

Users and vendors agree that true data sharing will take more than just co-hosting data on a disk subsystem.

"You can't look at data sharing as just a storage thing," said Bill Pinkerton, vice president of storage marketing at IBM. His group works with IBM's server divisions to try to improve the way data is shared across the different platforms, he said.

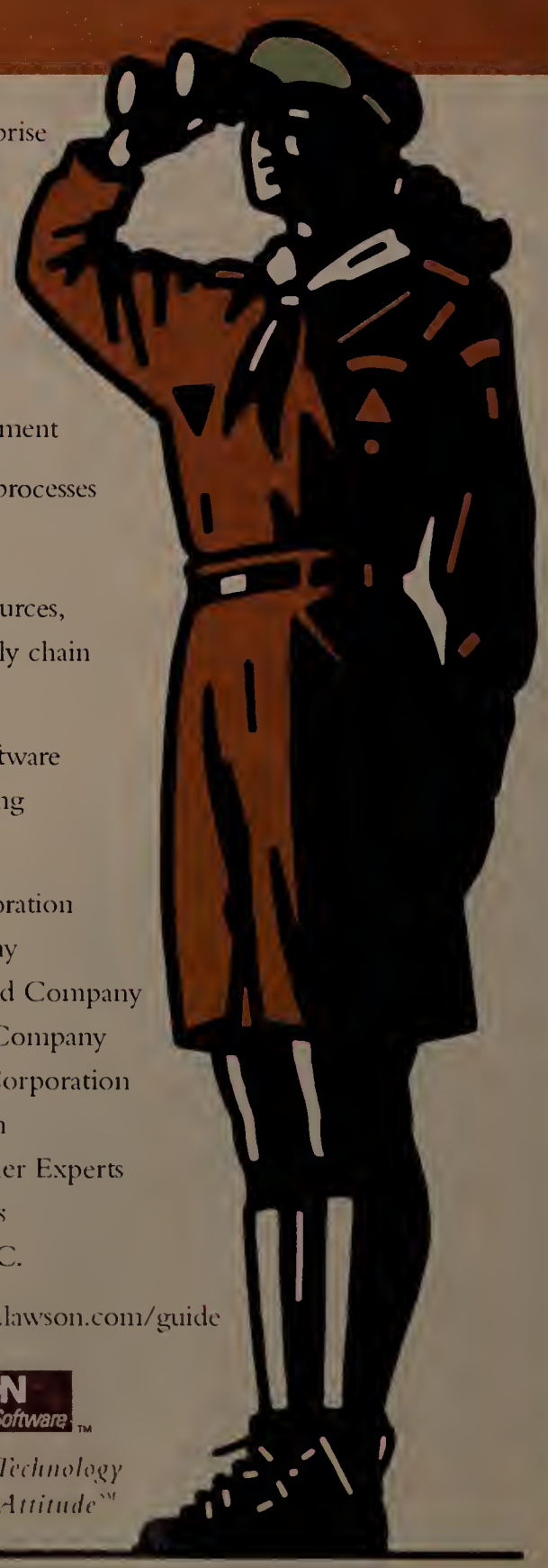
But this goes beyond just one vendor's server and storage products.

Members of Share, IBM's mainframe user group, include the following in their definition of true data sharing, which they dub the data delivery utility:

- **Access that can be shared at the lowest level of data**
- **Format transparency**
- **Data consistency when moved between different platforms**
- **Continuous availability**

— Tim Ouellette

THE LEADERS FOLLOW LAWSON SOFTWARE.



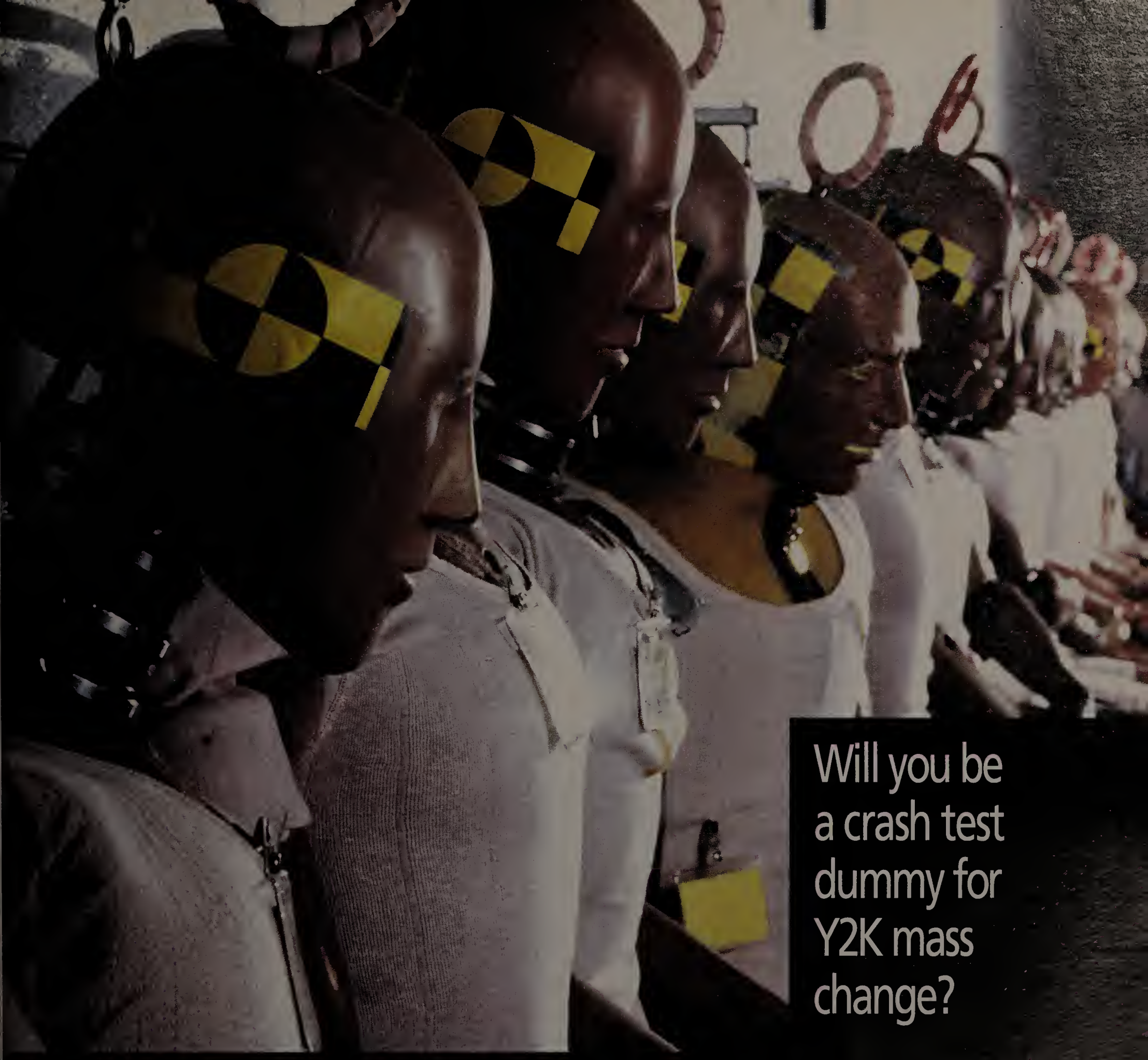
- Web-deployable enterprise applications — today
- Self-Evident Applications™ featuring zero training browser technology
- Activity-based management
- Workflow-automated processes
- Self-service capablities
- Financials, human resources, procurement and supply chain management
- Enterprise business software provider to these leading companies:

McDonald's Corporation
Walgreen Company
Sears, Roebuck and Company
The Penn Traffic Company
Dayton Hudson Corporation
Polo Ralph Lauren
Wilsons The Leather Experts
Costco Companies
SUPERVALU INC.

Find out more @ www.lawson.com/guide

LAWSON Software™

Leading Edge Technology Without The Attitude™



Will you be a crash test dummy for Y2K mass change?

Avoid the crash. Make mass Y2K change in-house with the privacy and control you need, and a partner you can trust.

There is a long line of vendors promising to manage your mass Y2K conversion project for you. Yet more project managers are realizing that outsourcing their project isn't without risk.

That's why so many Y2K managers are choosing to keep their project in-house by using Viasoft's ESW2000™. ESW2000 provides mass change without mass confusion. Every aspect of mass change projects is supported by ESW2000 tools, including automated century windowing, automated code conversion, and risk-based testing.

Change today. Test tomorrow. Drive the enterprise safely through the year 2000.

Don't be a dummy for "cookie cutter" change strategies. Do it right, do it yourself with Viasoft's complete ESW2000 solution.

Because better change is change for the better.

To download your FREE demo today, go to www.viasoft.com/change2. Or call us at 1-888-VIASOFT, ext.101.

VIASOFT™
Managing the Business of Information Technology

© 1997 Viasoft Inc All rights reserved

The name of the game is Service. And the champ, revealed by a Computerworl
Microsoft-trained service professionals than IBM, Compaq and HP. Combined. So call us a

survey,* is DIGITAL—trouncing the best-known integrators in the business. We have more
L-800-DIGITAL. Visit www.digital.com/service/nsis. And get ready to win in a networked world.

Novonyx delivers first round of products

By Laura DiDio

NOVONYX, the independent joint venture formed earlier this year by Netscape Communications Corp. and Novell, Inc., last week began shipping beta versions of its first software products.

Novonyx, based in Novell's former offices in Orem, Utah, began shipping limited betas of Netscape Enterprise Server 3.0 for NetWare, a high-end World Wide Web server; Netscape Messaging Server for NetWare; and Netscape FastTrack for NetWare. Volume shipments are due by year's end, said Novonyx President Rob Hicks. Enterprise Server 3.0 will be fully integrated with Novell Directory Services (NDS) via the Lightweight Directory Access Protocol (LDAP), he added.

Early beta users and analysts said with Novonyx, Netscape and Novell have the potential to go head-to-head with Microsoft Corp. in the hotly contested Internet race. If Novonyx can deliver the goods, NetWare/IntranetWare users will be able to deploy NDS and the SuiteSpot servers as their Internet gateways, said Bob Sakakeeny, an analyst at Aberdeen Group, Inc., a Boston consultancy.

Novonyx Netscape Enterprise Server for NetWare, Netscape Messaging Server for NetWare and Netscape FastTrack for NetWare will offer NetWare users:

- Web and application server that supports JavaScript
- Scalable message server that supports Internet standards Simple Mail Transfer Protocol, Post Office Protocol 3 and Internet Message Access Protocol 4
- Integration with NDS and LDAP
- Admin Server, a common management console for SuiteSpot server
- NetWare Runtime capability to add Enterprise Server and Messaging Server to existing networks

COMPELLING PRODUCT

Robert Forras, project leader for emerging technologies at Calvin Klein, Inc. in New York, said he "jumped at the chance" to test the Novonyx SuiteSpot servers. "The ability to add standards-based, NDS-integrated intranet solutions on top of our existing infrastructure is very compelling," Forras said.

Matt Rice, vice president and senior network manager of information system services at USTrust Bank Corp. in Cambridge, Mass., agreed. He said the combination of Netscape Web servers integrated with IntranetWare and NDS could preserve his investment in existing networks and reduce management tasks and training time.

"I currently administer my Web servers and my NetWare file servers as two separate entities. The Novonyx software will save me a minimum of 10 hours of management time each week and free up my network administrators to do other tasks that I might otherwise have to outsource," Rice said.

Len Steinbach, director of information technology at the Solomon R. Guggenheim Museum in New York, said that although he likes what he has heard so far about Novonyx's products and strategy, he remains a skeptic. "I've seen start-ups come and go. They're wonderful entrepreneurial experiments, but I won't put any money down until it looks like more of a sure thing," Steinbach said.

Hicks said pricing for Netscape Enterprise Server for NetWare, Netscape Messaging Server for NetWare and Netscape FastTrack for NetWare will be comparable to the rival Windows NT Enterprise Web Server, which retails for $1,295. □

EMMERCE YOURSELF
in Electronic Commerce

Electronic Commerce: New marketplace. New characteristics. New rules. The EC landscape is changing fast and you need an authoritative guide to emmerce yourself in this revolutionary new IT market direction.

For advertising information, contact:

John S. Gordon,
National Director of Business Development, Computerworld
Phone: (770) 668-5414
Fax: (770) 394-6354
E-mail:john_gordon@cw.com

Computerworld Emmerce: A primary source for 21st century IT Leaders. Computerworld Emmerce is the only print magazine and companion Webzine that explores the technologies and business management issues of electronic commerce.

▲ *Computerworld Emmerce Magazine Published in selected issues of Computerworld*

◄ *Computerworld Emmerce Webzine www.computerworld.com/emmerce Content refreshed every two weeks*

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Computerworld Emmerce. A new magazine. A new Webzine. Explore the opportunities.

[What oils the system wheels for Chevron]

As a major player in the oil industry, Chevron is used to difficult physical environments. The last thing they need is a tricky IT environment on top. So how do they analyze their vast range of data, found on almost as many platforms? Through desktop clients - **through Orbix.**

orbix®
distributed object technology

Dublin Boston Perth San Francisco Hong Kong Frankfurt Washington DC London

IONA Technologies at | **1-800 orbix4u** | **info@iona.com** | **www.iona.com**

IONA
Techn

Orbix is a registered trademark of IONA Technologies PLC. All other products or services mentioned herein are trademarks of their respective owners

Mobile[3]

3Com
Fast EtherLink® XL
CardBus PC Card
3C575-TX
32-bit
10/100BASE-TX

CardBus really Connects

3Com hits the market with the Fast EtherLink® XL CardBus PC Card, the fastest 10/100 connectivity in a new CardBus package. Pow!

Give your mobile users a powerful punch. Outfit your new, 32-Bit high performance CardBus notebooks with the fastest 10/100 PC Card in the industry. Only notebooks supporting the CardBus standard provide full 100 Mbps network performance, and only 3Com combines a 32-Bit architecture with lightning-fast Parallel Tasking® technology that is a full 31%* faster than other leading CardBus PC Cards.

Now Available!
Fast EtherLink 10/100 16-Bit PC Card for legacy notebooks.

The Fast EtherLink XL card not only packs a wallop with 100 Mbps throughput, it also supports 3Com's unique DynamicAccess™ features designed to improve overall network performance and manageability. Also, the Fast EtherLink XL card comes with a full lifetime warranty and is guaranteed compatible with leading CardBus notebooks. And here's another bell-ringer: 3Com's Fast EtherLink XL CardBus PC Card keeps your notebooks running extra cool and safe by drawing at least 50% less power than any other CardBus PC Card.

Now that 3Com has set the standard for Fast Ethernet CardBus performance, who else do you need in your corner?

1-888-906-3COM (ext. 103)
www.3com.com/pccard

3Com®

©1997 3Com Corporation. 3Com, EtherLink, Parallel Tasking are registered trademarks; DynamicAccess is a trademark of 3Com Corporation.
*Industry-standard Perform3 testing conducted by LANQuest Labs. For a full benchmark report, visit our website at www.3com.com.
**Limit one trial card per qualified business customer, per site as determined by 3Com. Dollars in U.S. currency.

Client/server disaster plans fall short

By Jaikumar Vijayan

A DISASTER could strike your distributed computing environment just as easily as it could a mainframe data center. But chances are good your corporation is far less prepared to deal with it.

As user departments continue to load increasingly vital corporate data onto Windows PCs and Unix- and Windows NT-based systems, few are taking the precautions necessary to recover from a natural or man-made disaster, warned Fred Joy, an analyst at Meta Group, Inc. in Stamford, Conn.

In research this year with more than 100 Fortune 1,000 clients, less than 5% had "back-to-front disaster recovery procedures," Joy said.

Many are in the process of putting at least some of their most crucial client/server systems under the purview of formal disaster recovery procedures, he said. But the coverage is nowhere as comprehensive as in the mainframe environment.

There is a real lack of knowledge about what kind of applications are running on what kind of platforms and how critical any of them could be.

Such holes could lead to drastic consequences — including loss of service and data, analysts and users warned.

A good disaster recovery plan should include measures such as setting up special buildings or hot sites ready to assume operations in case the primary location fails; backing up data regularly and storing it in fire-safe, off-site locations; and establishing procedures to restore key personnel and services quicker than others.

In a distributed environment, typical planning gaps include things such as inadequate procedures for backing up data; not storing data backups off-site; lack of virus protection; widely dispersed and unsecured server hardware; and a lack of contingency procedures to restore service after a disaster.

Problems implementing disaster recovery procedures in a client/server environment

- Widely dispersed systems
- Too many systems/platforms
- Lack of information on which systems are vital to business
- Lack of corporate support and staff
- Costly to implement

"At the very minimum, users should do regular backups, store [data] off-site and have good virus protection," said Tom Oleson, an analyst at International Data Corp. in Framingham, Mass.

The data center at the Louisana Department of Labor in Baton Rouge has special fire-retardant walls and wiring. But like many other organizations, it doesn't have the same level of security outside the data center.

"There is little to secure these systems from fire — or even from having unwarranted people access them," said Charles Jumonville Jr., an operations manager at the Louisiana agency. After a disaster, "you can always go out and buy more hardware, but it is going to be real tough to replace software," he said.

The problem with protecting widely dispersed, heterogenous servers and PCs running a variety of software and operating environments is that having full disaster recovery procedures for all of them may end up being extremely costly and unfeasible, analysts and users said.

For example, Meta Group estimates that for some large organizations, mainframe disaster recovery procedures could easily top $1 million annually. Mainframe disaster recovery procedures include expensive up-front procedures such as special, fire-retardant buildings, wiring and sometimes even fully duplicated hot sites that can take on the processing load if a primary location fails. That kind of insurance can easily cost large corporations $1 million.

While procedures for distributed environments should cost less, finances still can be a deterrent, analysts said.

In a distributed environment, because of the number of systems involved and their scattered nature, it is impossible — and inadvisable — to provide the same kind of redundancy and up-front protection.

Instead, disaster recovery experts say users should plan more fundamental recovery procedures and take a more prioritized approach to the problem.

The site doesn't have to be fully equippped; it doesn't even have to have any computers. And it doesn't have to be large enough to handle all the affected users — just the most important ones.

For example, Priority Pharmacy, a large mail-order pharmaceutical company in San Diego, backs up all its information daily. At least once a month, it updates all its information onto one tape, which it then stores off-site in a fireproof safe.

Its servers run all its applications and databases. The servers are dispersed across multiple buildings on the company's campus and have enough storage and fail-over capabilities built in to them to handle a failed server's load in case of an emergency.

SIX-HOUR RECOVERY

All that will allow the company to recover from a disaster in about five and one-half hours, said John Williams, IS manager at Priority.

Advanced Technology Laboratories in Bothell, Wash., doesn't have a hot site backing up its server infrastructure.

Instead, the company has contracted with a local vendor to provide a basic "shell" building — comprising power and networking services — available in case of disaster. And it has agreements with local vendors for basic hardware, said Fred Deboer, director of IS project planning.

Deboer said the company would be able to bring back at least some of its core information technology services in between 48 and 72 hours. "At this point, it is acceptable to us. I would give our [disaster recovery] plan a 7 on a 1-to-10 scale," Deboer said. □

Users, IS not doing enough to safeguard laptop information

By Kim Girard

DESPITE THE THREAT of possibly losing a year's worth of work and sensitive corporate information, analysts say many IS departments are doing little to protect the data users carry with them on laptops.

"We do little backup," conceded Janet Wilson, information systems director at Mutual Insurance Corp. in Phoenix. "It's [the employee's] responsibility to do it on a daily basis."

Many IS shops take that view because it can be a nightmare for many large organizations to back up machines, said James Staten, an analyst at Dataquest in San Jose, Calif.

Because few users follow through, the result is "abysmal" data loss prevention, said Scott Gaidano, president of DriveSavers, Inc. in Novato, Calif. The company has rescued lost information on downed hard drives since 1985.

Gaidano said 25% of the hard drives they try to salvage are from laptops — about 1,200 within the past year.

"Users don't get the concept that the machine they're on will stop, and it could be tomorrow," he said. His advice? IS managers should make laptop backup as simple and hassle-free as possible. Also, users should store all data on an external portable storage drive and carry the cartridge in a separate bag.

The average Fortune 500 company with 1,000 or more laptops typically loses about 14 laptops per year to damage or theft, analysts said. And most corporate IS departments pay out-of-pocket for lost laptops until the price tag tips over the amount of their property insurance deductible — typically about $25,000. But there is no price tag on lost data.

"We try to work with users on doing frequent backups and back up the server when they're in the office," said Michael Lind, a PC support manager at Tredegar Industries, Inc., a plastic and aluminum manufacturing company in Richmond, Va. The company, which has 150 laptops, also has considered encrypting sensitive files, he said.

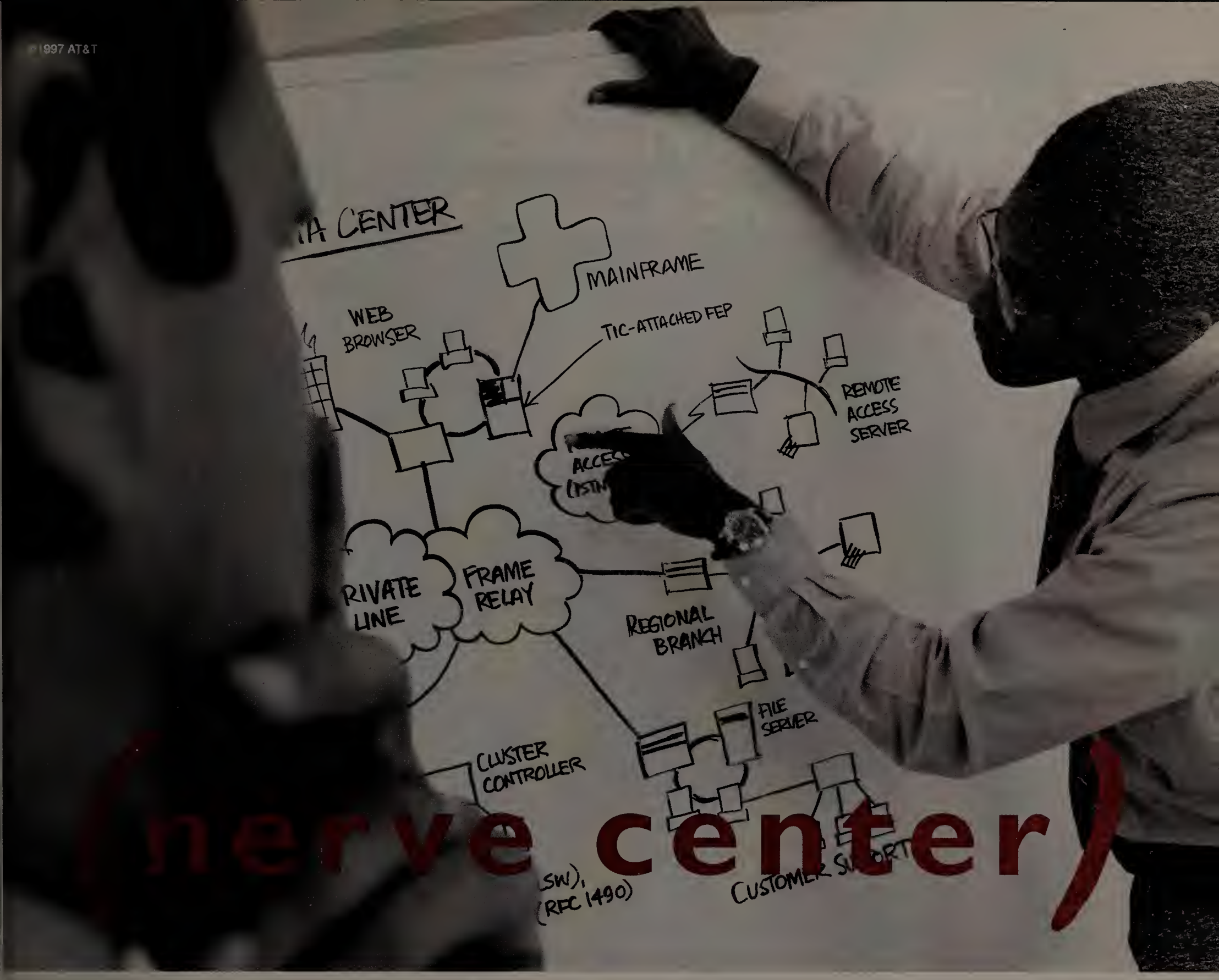
SAFETY TIPS FOR LAPTOP USERS

- Keep current copies of important data somewhere other than your laptop
- Quit programs before shutting down to avoid data loss and program corruption
- When compressing data, make extra backups because compressed data is more difficult to recover
- Never reformat your drive without testing your backup
- Don't move or jar a drive while it's operating

Source: DriveSavers, Inc., Novato, Calif.

While encryption is one way to prevent data theft, Staten said several vendors are developing gadgets to help track laptops. These include a kill-switch device that can be activated to erase everything on the hard drive and a Lojack-type device that wirelessly connects the laptop to the network so when a thief logs in, the machine shuts down. During the past two years, more companies have started requiring workers to pay for their own notebook insurance premium at an annual cost of $75 to $96, according to Brian Haase, a senior account executive at Safeware, Inc., a Columbus, Ohio-based computer insurance company. □

©1997 AT&T



AT&T Data Networking solutions

It's that critical place in the company where people, ideas and applications all intersect. It's your data network. And you're in charge of it. Fortunately, AT&T Data Networking Solutions can help. We offer leading-edge services backed by technical expertise that extend all the way up to AT&T Labs. We'll work with you to develop solutions flexible enough to evolve as your company grows. In fact, in Computerworld's first ever National Customer Satisfaction Survey, users rated AT&T the top provider in wide-area network transmission services. To learn more about our team and services, visit us at www.att.com/data, call your account executive, or AT&T at 1800-248-3632. For getting the most from your network, AT&T is front and center.

It's all within your reach.

AT&T

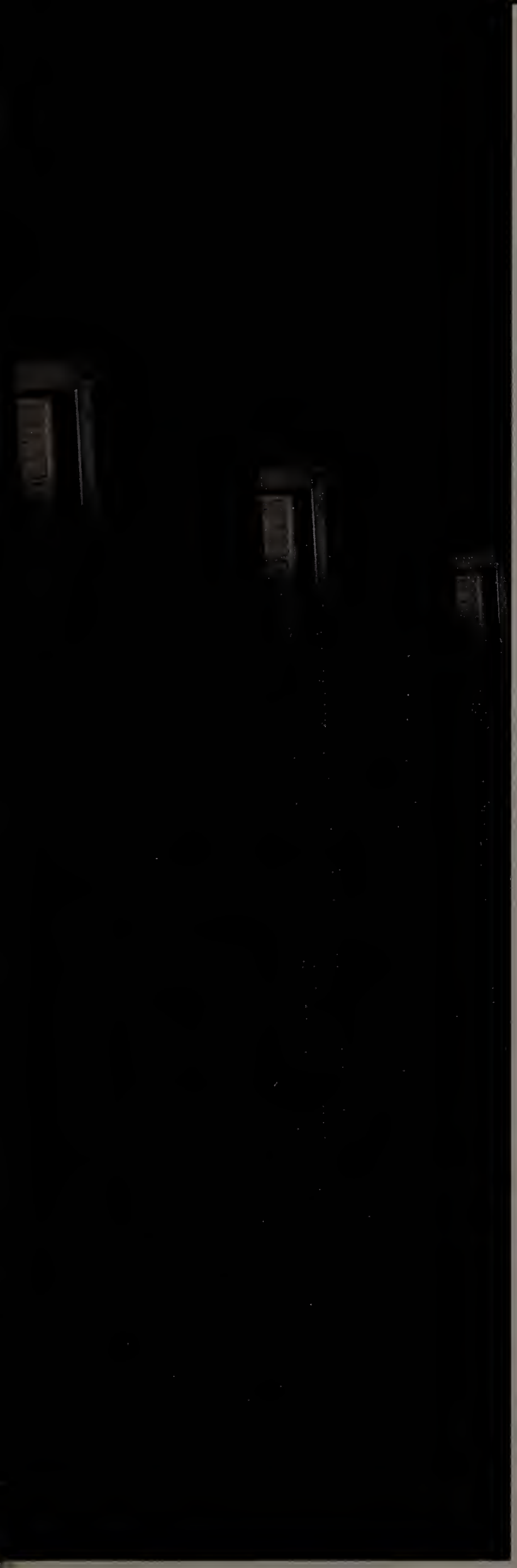
BY PRICING OUR 4-WAY SERVERS FROM $12,999, WE AREN'T LAUNCHING A SALE.

WE'RE LAUNCHING A CRUSADE.

intel inside
PENTIUM PRO PROCESSOR

This device is subject to verification to the FCC Class A radio frequency emission standards. It is not, and may not be, offered for sale or lease for use in a residential environment.

★Prices and specifications valid in the U S only and subject to change without notice. †For a complete copy of our limited warranties, please write Dell USA L.P., One Dell Way, Round Rock, TX 78682, Attn: Warranties. *IDC Quarterly Market Tracker Q297. BusinessCare is a service mark of Dell Computer Corporation. ^On-site service provided by third-party providers and may not be available in certain remote areas. 3Com and EtherLink are registered trademarks of 3Com Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Windows and Windows NT are registered trademarks of Microsoft Corp. ©1997 Dell Computer Corp. All rights reserved. Both 6100 systems must have minimum configuration of Dual 200 MHz/512KB Cache Processors, 256MB ECC Memory, (3) 9GB HD's and RAID. Limited time offer.



It may sound trite, but we're fighting for you. To put an end to the prices that most customers are paying for high-end systems. Our ammunition? The Dell® PowerEdge® 6100 Pentium® Pro processor server. A high-end SMP server for $12,999 that has four Pentium Pro processors, redundant hot-pluggable cooling fans, hot-pluggable hard-drive bays and ECC Memory. Need more? For an additional charge you can bolster your PowerEdge 6100 with an expandable RAID controller, redundant, hot-pluggable power supplies, redundant NICs and Automatic Server Recovery. And now for another weapon in our arsenal: exceptional service. We offer the BusinessCare℠ 4-hour On-site^Δ response option, standard Next-Business-Day On-site Service and 24x7 telephone support lines. And being one of the leading price/performance systems in the server category has helped make us the fastest growing major server manufacturer around.* Did we mention we also have key relationships with some of the major players in the industry like Microsoft, Intel, Oracle and Informix? Support a winning cause. Give us a call or visit our website.

ENTERPRISE SERVER

DELL® POWEREDGE® 6100 SERVER

- 200MHz Pentium® Pro Processor
- 64MB EDO ECC Memory
- 512KB Integrated L2 Cache
- Dual Integrated PCI Ultra/Wide SCSI-3 Controllers
- 4GB Ultra/Wide SCSI-3 Hard Drive
- 24X Max/12X Min Variable SCSI CD-ROM Drive
- Intel Pro/100B PCI Ethernet Adapter
- Intel LANDesk® Server Manager v2.52
- 10 Drive Bays: 6 Hard Drive, 4 Removable Media
- 10 Expansion Slots: 6 PCI, 4 EISA
- 3 Years NBD On-site^Δ Service
- 1 Year DirectLine℠ NOS Support
- 7x24 Dedicated Server Hardware Technical Telephone Support

$7499

Order Code: 200268

ENTERPRISE SERVER

DELL POWEREDGE 6100 SERVER

- 4x200MHz Pentium Pro Processors
- 128MB EDO ECC Memory
- 512KB Integrated L2 Cache per Processor
- Dual Integrated PCI Ultra/Wide SCSI-3 Controllers
- 9GB Ultra/Wide SCSI-3 Hard Drive
- Dual Peer PCI Bus
- 24X Max/12X Min Variable SCSI CD-ROM Drive
- Intel Pro/100B PCI Ethernet Adapter
- Intel LANDesk Server Manager v2.52
- 10 Drive Bays: 6 Hard Drive, 4 Removable Media
- 10 Expansion Slots: 6 PCI, 4 EISA
- 3 Years of NBD On-site^Δ Service
- 1 Year DirectLine NOS Support
- 7x24 Dedicated Server Hardware Technical Telephone Support

$12,999

Order Code: 200319

ENTERPRISE SERVER

DELL POWEREDGE 6100 SERVER

- 4x200MHz Pentium Pro Processors
- 256MB EDO ECC Memory
- 1MB Integrated L2 Cache per Processor
- Dual Integrated PCI Ultra/Wide SCSI-3 Controllers
- 3x9GB Ultra/Wide SCSI-3 Hard Drives
- Dual Peer PCI Bus
- 24X Max/12X Min Variable SCSI CD-ROM Drive
- PowerEdge Expandable RAID Controller
- Intel Pro/100B PCI Ethernet Adapter
- Intel LANDesk Server Manager v2.52
- Redundant Hot-Pluggable Power Supplies
- 10 Drive Bays: 6 Hard Drive, 4 Removable Media
- 10 Expansion Slots: 6 PCI, 4 EISA
- 3 Years of NBD On-site^Δ Service
- 1 Year DirectLine NOS Support
- 7x24 Dedicated Server Hardware Technical Telephone Support

$27,199

Order Code: 200313

BUY TWO QUALIFYING POWEREDGE 6100'S AND GET A POWEREDGE RACK FREE. CALL YOUR SALES REP FOR DETAILS.*

TO ORDER TOLL-FREE

800-937-1270

TO ORDER ONLINE

www.dell.com

Mon-Fri 7am-9pm CT
Sat 10am-6pm CT
Sun 12pm-5pm CT
In Canada,* call 800-839-0148

Keycode #61004

DELL®

www.dell.com

"I didn't hire you to make popular decisions.
I hired you to make smart ones."
"CyberGuard is the smart decision."
The last thing you want when choosing your firewall is to make a mistake. It exposes the assets of your company to significant risk.
The fact is: every time an employee launches onto the Internet, you are vulnerable to hackers. And not the curious hackers of the Eighties; today's hackers are malicious.
Imagine an employee who funnels money from the corporate bank account. Or a competitor who pilfers proprietary data. Any breach in infosecurity can have serious consequences. In fact, 49% of polled Fortune 1000 companies have reported hacking, and they quantified losses at over 100 million dollars.
The best deterrent is the world's most secure firewall. The firewall that is the network security system of choice for major banks, financial institutions, and governments throughout the world. And the firewall that consistently beats the competition in security, performance and usability tests by *Network Computing, Data Communications* and *Communications Week* magazines.
What you need is CyberGuard. It's never been hacked. And we guarantee it will be one of the best decisions you'll ever make.
CYBERGUARD CORPORATION
Keeping Secrets...Secret
Editor's Choice
BYTE BEST
NSTL
DataComm MAGAZINE TESTER'S CHOICE MARCH 1997
MAKE THE SMART DECISION & CALL:
1-888-CYBG-INFO (292-4463) ext. 6001
www.cyberguardcorp.com

51 issues for $39.95

Save over 73%

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew

Single copy price: $3.00

*U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No
Intranet Products ❑ Yes ❑ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?

❑ Yes ❑ No

B4L7 R

51 issues for $39.95

Save over 73%

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew

Single copy price: $3.00

*U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)
IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management
CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer
DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.
OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)
Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep
App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No
Intranet Products ❑ Yes ❑ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?
❑ Yes ❑ No

B4L7 R

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

Computer Industry

Cisco's Gigabit Ethernet delay won't hurt

▸ *Analysts: User need for technology isn't great yet*

By Bob Wallace

CISCO SYSTEMS, INC.'S delays in developing Gigabit Ethernet networking products won't damage the company or leave users in the lurch, industry analysts said last week.

Cisco CEO John Chambers recently told *Computerworld* that users shouldn't expect Gigabit Ethernet offerings from the company for five to six more months.

Gigabit Ethernet products, as the name implies, let users run networks at 1G bit/sec. using tried-and-true Ethernet technology. The wares are most commonly pitched for campus backbones and for access to server farms.

"The delays won't hurt them a tad because there are no users that absolutely have to have Gigabit Ethernet products today," said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. "All that's going on now with Gigabit Ethernet is tire kicking.

"I don't expect the market to really take off until late 1998 anyhow," Nolle said.

Cisco bought Gigabit Ethernet component vendor Granite Systems in September 1996 for $220 million. But when no products were forthcoming, rumors arose about problems between the two companies.

The rumors intensified as Cisco rivals 3Com Corp., Bay Networks, Inc. and a slew of start-ups announced Gigabit Ethernet products. Some smaller firms have already begun to ship the offerings.

Chambers dismissed the rumors and said Cisco will deliver Gigabit Ethernet products after a standard for the technology is completed. That should be by early to mid-1998, vendors said.

"What happened with the Gigabit Ethernet market was that users were swamped in a tidal wave of product and technology hype before a single product shipped," said Daniel Briere, president of TeleChoice, Inc. in Verona, N.J. "It won't hurt Cisco or anyone else to not be in this market for some time because there are virtually no buyers out there." □

& **Cisco CEO sees convergence of voice, video and data as industry priority. Page 51**

E-mail tool vendors merge

By Barb Cole-Gomolski

THE RECENT ACQUISITION of Baranof Software, Inc. by Tally Systems Corp. will result in a one-stop shop for electronic-mail analysis and management tools, users and analysts said.

Hanover, N.H.-based Tally Systems, which has 145 employees, sells systems for taking inventory of applications running on companies' PCs. In April, Tally introduced Veranda Enterprise Messaging Reporter for tracking and reporting on E-mail usage. Baranof, a 30-employee company in Watertown, Mass., sells a line of tools for monitoring the health of E-mail networks and World Wide Web servers.

E-mail management tools are becoming more important as messaging usage soars and E-mail becomes more mission-critical. Chris Selland, an analyst at The Yankee Group in Boston, said it makes sense to marry management tools such as Baranof's with desktop asset management software such as Tally's because it will help companies get a handle on "previously unmanageable" E-mail systems.

Most of the leading messaging systems include built-in management tools, but the tools are proprietary. In contrast, Baranof's line of E-mail management software supports multiple mail systems, such as Lotus Development Corp.'s Notes and Microsoft Corp.'s Exchange.

Chris Goulart, manager of messaging architecture at Thomson Financial Services in Boston, said the move will let sites take E-mail management to a new level. The integration of the companies' products means users will have one environment in which to make sure E-mail is up and running and to track how their system is being used, Goulart said.

Because both companies are privately held, terms of the sale weren't disclosed. □

EXPANDING E-MAIL MANAGEMENT

Highlights of the buyout of Baranof by Tally

- **Baranof's 30 employees become part of Tally's new messaging business unit**
- **Tally's Veranda Messaging Reporter to be integrated with Baranof's E-mail management tools**
- **Baranof's products will support most popular messaging systems, such as Notes and Exchange**

Truce makes Alpha's future uncertain

By Jaikumar Vijayan

MORE QUESTIONS than full-blown concerns followed last week's expected changing of the guard on stewardship of Digital Equipment Corp.'s much-touted Alpha chip technology.

Digital's settlement of an exchange of suits over chip patents with Intel Corp. last week means all future manufacturing responsibility of the Alpha chip now rests with Intel (see FAQ).

Digital's Alpha chip garnered a mere 0.1% of the total $16.2 billion in semiconductor revenue last year, said Semico Research Co. in Scottsdale, Ariz.

For the moment at least, users and analysts seem to be buying Digital's line that the Alpha road map won't be impacted in the short term.

But anxiety continued to swirl about the company's long-term plans for the Alpha platform, its dual-architecture strategy and its continued commitment to the OpenVMS platform.

"The part that leaves everybody wondering is what this is going to mean for the long-term future of OpenVMS," said Joseph Pollizzi, president of the Digital Equipment Computer Users Society.

If Digital decides to quickly migrate its Unix and NT customers to the joint Hewlett-Packard Co./Intel IA-64 architecture — as a lot of users and analysts expect it will — OpenVMS customers will be left in the lurch, Pollizzi said.

As part of the announcement last week, Digital said it will port its 64-bit Unix to the upcoming IA-64 architecture Intel is developing with HP. But Digital refused to comment on its plans for OpenVMS, which is currently supported only on Alpha.

"This is something that needs to be immediately clarified by Digital" to reassure users that their investments in OpenVMS will be safe, Pollizzi said.

Digital Vice President John Rando claimed the arrangement with Intel will in fact extend Alpha's life. Intel's mass-volume manufacturing capabilities mean Digital will now be able to churn out new versions of its Alpha chip faster and more economically than before, Rando said. The next chip is due early next year.

He said Digital will continue with its plans of offering Alpha servers at the high end and Wintel servers for a broader market.

Intel last week agreed to buy Digital's Alpha chip manufacturing operations for $700 million. Digital will continue to own the design and development rights to Alpha, which Intel will manufacture for Digital.

Intel's involvement "means that we will be able to move to a more open architecture quickly now," said Fernando Yson, systems manager of Alpha systems at Unicare in Huntington Beach, Calif.

Similarly, the porting of Digital Unix to IA-64 means Digital users will get full-blown 64-bit application support on IA-64 architectures when it begins to ship in late 1998, Yson said. □

Senior editor April Jacobs contributed to this story.

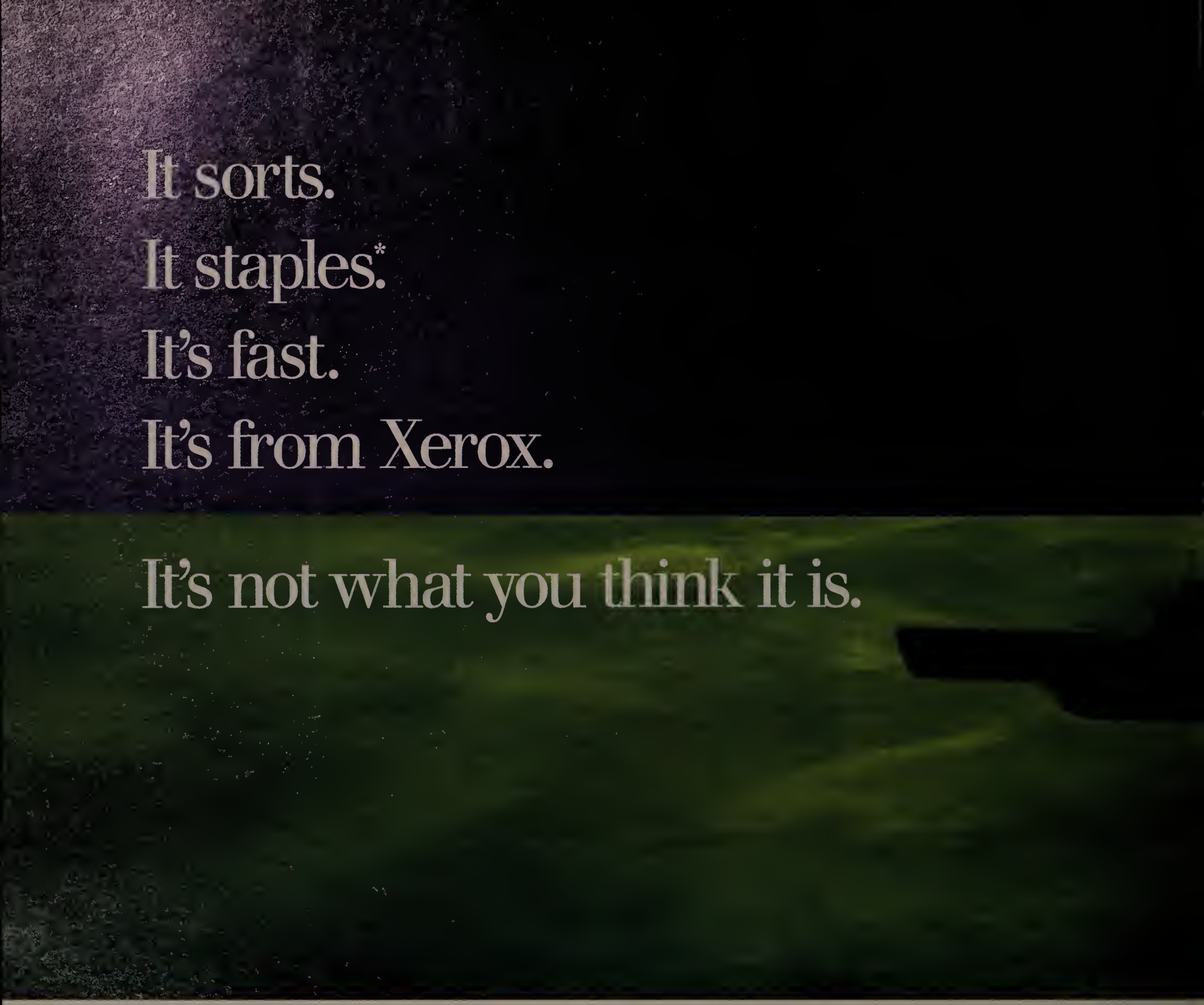
FAQs: Digital, Intel make up

Q: ***Why did Digital sue Intel?***
A: Digital claimed that Intel had infringed upon 10 of its patents relating to technologies such as cache management and branch prediction.

Q: ***How did Intel respond?***
A: It countersued Digital to return advance information on forthcoming Intel chip technologies.

Q: ***What was last week's settlement about?***
A: Intel agreed to buy Digital's Alpha chip manufacturing operations for $700 million. Digital will own design and development rights to Alpha, which Intel will manufacture for it. Digital agreed to port 64-bit Unix on HP/Intel IA-64 architecture. Both Intel and Digital agreed to drop all litigation.

Q: ***What does this mean for Alpha users?***
A: Probably little in the near term. But the settlement could accelerate a move away from Alpha to the IA-64 architecture. Questions remain about the future of OpenVMS if Digital moves away from Alpha to IA-64.



*Add-on available soon. †Estimated street price (model not shown). XEROX,® The Document Company,® and the digital X® are trademarks of XEROX CORPORATION. 36 USC 380

It's a new benchmark in Network Printing.

Introducing the Xerox DocuPrint N32. With its 32 ppm speed, copier-like options, and $2900† starting price, there's nothing like it. Its modular design lets you build your own solutions. And along with seamless connectivity, you get our new WorkSet technology that provides true multiple document set printing and dramatically minimizes network traffic. We'd like to show you all the ways the DocuPrint N32 makes office printing simpler and far more productive. Give us a call at 1-800-34-XEROX, ext. 2976. In Canada, 1-800-ASK-XEROX, ext. 2976. Or visit www.xerox.networkprinters.com.

Xerox Network Laser Printers. A different line of thinking.

THE DOCUMENT COMPANY

XEROX

OPINION

Start your engines Hear that revving sound in the distance?

That's the second round of electronic commerce — the flinty-eyed, money-making ROI kind — firing up its engines at AlliedSignal.

The automotive aftermarket division of this $13.5 billion manufacturer later this month will launch a unique Web site (see our exclusive story on page 63) aimed squarely at profitability. It will serve volumes of business customers, entertain avid race fans and draw in random consumers with lures such as downloadable software that diagnoses car trouble.

These days, the most ballyhooed examples of moneymaking Web sites hail from the computer industry

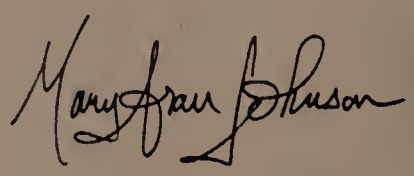
itself (Cisco, Dell and Netscape come to mind) or the financial industry. An estimated $8 billion to $10 billion in goods and services will be sold online this year.

But traditional, conservative manufacturers — the heart and soul of supply-chain economics — have done little more than create marketing brochures online. One survey noted that 80% of Fortune 500 companies have a Web presence. Yet another poll pointed out that 78% of company Web sites weren't even created with revenue generation in mind.

The second round of electronic commerce will change that attitude dramatically, as sites such as AlliedSignal's demonstrate how to make the Web a business venture rather than a cyberadventure.

Six months and $2 million ago, *www.highperformancedriving.com* was just a lot of intriguing talk from one of AlliedSignal's IS departments. But IS ended up playing the pivotal role in creating the site, involving every department in the company along the way. The automotive division is counting on doing business online with many of its 2,400 customers, but it also intends to save millions of dollars next year by eliminating the need for private-network electronic data interchange.

So ladies and gentlemen, start your E-commerce engines. The race is on.



Maryfran Johnson, *Executive editor*
Internet: *maryfran_johnson@cw.com*

LETTERS

Is it a crime to be successful?

EDITOR PAUL GILLIN'S column on the Federal Trade Commission investigation of Intel ["Federal Folly," CW, Sept. 29] couldn't be more dead-on!

Thank you for telling it like it is. Intel chips come at a price — everyone knows that, and people are willing to pay for it.

Does my brand preference mean that Intel should be punished, or Coke, Nike, Chevrolet or AT&T? Why are the Department of Justice and the Federal Trade Commission wasting more taxpayer dollars and everyone's time?

I like Intel's products and support.

And heck, I even like their commercials. So sue me, not them!

Tim Barrett
Louisville, Ky.
timbarrett@rehabdesigns.com

Keeping up to date on skills will put an end to age bias

AFTER READING your article on job (age) bias ["IS vets organize to beat job bias," CW Oct. 13], I just shook my head in disbelief.

Supply and demand is the bottom line in the business world.

So logically, if retired programmers bothered to learn the current in-demand skills, they would be in demand.

Age bias, race bias, sex bias . . . lazybrain nonsense.

It all boils down to having a skill that someone is willing to pay money for.

Jerry Collins
Indianapolis
collinsj@indy.net

AMEN TO Paul Gillin's column on Sept. 29. It's about time someone noticed how the not-so-great businesses scream foul play when someone else does something right.

I cannot believe that, in this day, it is a crime to be successful. Intel is doing a lot of things right and the consumers prove it with every Intel purchase. These unfounded lawsuits are a threat to those who would be great and an incentive to be mediocre.

Brian Stork
Consumer Credit Counseling Service
Seattle

Sun right on track with Java

MOST OF the folks in the industry have already heard how Microsoft, Intel, Compaq and others would like to back Sun into the corner of releasing control of Java to some central standards body. Of course, none of these companies has any vested interest in immobilizing via a long, public standardization process a technology whose claim to fame (no matter how tenuous) is true "write once, run anywhere" platform independence.

I guess that their plea is purely for the good of the rest of us. How dumb do these people think we are?

Maybe Sun would agree to the suggestion when Microsoft gives up control of Windows and Intel could share its CPU designs — royalty-free — with every chip manufacturer in the world.

John Zielinski
Lynwood, Ill.
john.zielinski@infores.com

A year 2000 getaway plan

SO WHEN Jan. 1, 2000, hits, should I be camping in the hills with my life savings, Social Security printout, TRW report and enough packaged food and bottled water to last me weeks? I've developed a strange type of paranoia from continually being bombarded with articles on the year 2000.

If it is as serious as they say it can be, why hasn't this reached a national level to develop mandatory standards for businesses, including the government? I feel lucky to be immersed in the IS world so that I can personally be aware of precautions and do my best to warn loved ones of some risks. But 99% of this country has no clue about this issue.

99% of this country has no clue about year 2000 problems.

I'd like to see *Computerworld* devote a special issue to year 2000 practical tips and precautions, so that we can all be prepared and pass them along to our families.

Ellen Russ
San Francisco
ellen@sisinc.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Year 2000: Prevent the panic now

Robert L. Scheier

Is it time to panic over the year 2000 software bug? No. But the drumbeat of doom is getting louder and coming from more respectable people.

It's time for leaders in government, business and information technology to prevent panic by explaining the real but manageable risks and what they're doing to minimize them.

The fear is real. When 150 members of a year 2000 user group in Washington were asked last month to rate year 2000-related system failures on a scale from one (inconvenient) to 10 (social disaster), about a third described them as eight or higher. One project manager said he plans to stock six months' worth of provisions in case the economy shuts down. None plan to fly on Dec. 31, 1999.

What's got these people so scared?

For one thing, the unforeseen problems that keep cropping up. One attendee, for example, said she hoped to find a 21st century year when the calendar dates match those in 1997 and just turn her systems ahead to do testing. But she didn't know that her shop had recently signed software licenses that expire in 2003, risking system crashes if their clocks moved past that date.

We take precautions for floods. Do the same to get ready for year 2000 bugs.

Another growing worry is the "embedded" processors contained in everything from bank teller machines to LAN routers to telephone switches. CIO Arthur Gross at the Internal Revenue Service recently warned that such "infrastructure" bugs could require as much work as those in the more visible applications.

Some equally knowledgeable observers claim the "infrastructure" problem is overblown, but not knowing may be catastrophic enough.

Some observers speculate that the Nuclear Regulatory Commission will shut down nuclear power plants if their owners can't prove every chip and every line of code in those fiendishly complicated systems can tell the difference between 1900 and 2000. Anybody know how to design and perform those tests in the next two years?

Underlying all this is the realization of how dependent we've become on computers as we've wrung fat out of our economy. Automatic replenishment systems deliver parts just in time; "knowledge workers" eliminate the need for middle managers; global financial markets react instantly to news.

Imagine that just one major financial exchange stops, even for a day, because of two or three year 2000 bugs. And that, as CNN breathlessly reports that failure, just one regional automated teller machine network goes down because of a telephone problem. And that panicky customers in a neighboring state empty functioning ATMs of cash.

I hesitate to trust these bogeyman stories because they're so easy to spin and impossible to debunk before the fact. But with all the code and all the chips in all the systems — and IS's poor track record in delivering complex systems — is it realistic to think 10, 100 or 1,000 such glitches won't slip through the cracks in inconvenient and possibly dangerous ways?

Governments, businesses and IS organizations must prevent panic by explaining a) what could go wrong, b) what they're doing to prevent the worst problems and c) their contingency plans to keep necessities such as electricity, water and cash flowing if worse does come to worse.

Our society doesn't collapse from floods, blizzards or hurricanes because we take reasonable precautions and have emergency services ready.

It's time to do the same for the year 2000 software bug. And it's time for IS — having helped create this mess — to help lead the way. □

Scheier is a senior editor in Computerworld*'s Managing section.*

& **Some experts say there's no need to sweat over year 2000. Page 69**

Webmasters show IS how to talk to users

Michael Schrage

A not-so-dirty, not-so-little secret about webmasters and IS is that they frequently dislike each other's intestines — in other words, they hate each other's guts. There are reasons for this: The webmaster culture is a lot easier and more freewheeling.

IS also resents how the 'net can so wrongfully overshadow the genuinely hard enterprise issues that must be managed in this era of accelerated 'netcentricity.

That said, intranets can evoke important behaviors that IS would do well to monitor and emulate. As much by default as by design, savvy webmasters are creating infrastructures for interaction that traditional IS can't seem to master.

A global apparel company I spoke with discovered that the real value of its intranet development came less from the data its Web sites carried than from the level of interdepartmental collaboration that designing and implementing the sites required. In other words, the process of building their intraweb proved more valuable than the site itself. Managers at the company — whose brand name you know and probably wear — seemed genuinely surprised at how important that co-design experience was to get people to know one another and gain insight into one another's priorities.

Interestingly and sadly, company staffers contrasted this experience — with utterly no prompting from me! — with their standard interactions, in which IS played traffic cop rather than facilitator.

Their story was hardly unique. Many people and organizations like the informal, bottom-up design sensibility the Web encourages. The Web appears to be a better medium for pushing collaborative prototyping than, say, R/3 or Oracle System 8. More important, smart webmasters promote and manage the Web as a medium for collaborative prototyping and as a vehicle to assure that the right people — from finance to human resources to marketing — meet one another to design the right site(s).

Does this happen because 29-year-old webmasters are politically smarter and savvier than their IS counterparts? Absolutely not! What we have here is a classic case of multimedia McLuhanism — that is, the technology shapes the way people interact as much as people shape the technology. Precisely because the Web requires a lower level of expertise to make functional than, say, Unicenter or Notes, it invites a higher degree of interaction — for better and for worse.

The Web appears to be a better medium for collaborative prototyping than, say, R/3 or Oracle.

Indeed, I have seen companies foolishly delegate the task of intranet site building to departments and functions. Each department builds its own "page" and then counts on the webmaster to link them all together. But those cases seem to be the exception rather than the rule. Most often, enterprises are using the Web as an excuse or as a reason to get together to create a multimedia, multidata resource for both the internal organization and the outside world.

The lesson for IS is that the Web is creating new levels of participation, co-design and collaboration in the evolution of enterprise computing. Equally important, the Web is raising expectations for greater interaction and collaboration in IS. IS can respect this new reality and build upon it or it can moan about how managers "just don't understand" how "real enterprise computing" is so different from the Web. Then again, complaining seems to be an IS core competence. □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

DSS transaction no. 009511265
FILED QUERIED ANALYZED

AT 6:32 PM EVERY WEDNESDAY, OWEN BLY BUYS DIAPERS AND BEER.

DO NOT JUDGE OWEN.

ACCOMMODATE HIM.

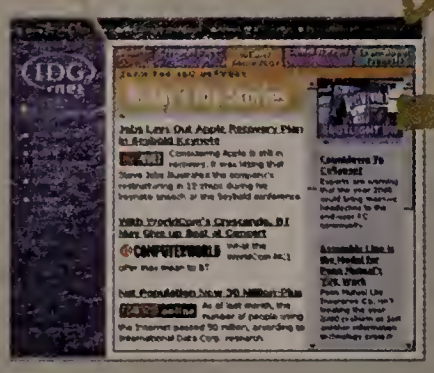
If a data mining query discovers that between 6 and 8pm men buy diapers and beer, chances are you'll sell more diapers and beer. It's with this kind of valuable — and sometimes odd — information mined from company databases that Tandem is helping people in retail, banking, telecommunications and insurance uncover business opportunities. And coupled with our reputation in handling 90% of the world's stock transactions, 80% of all ATM transactions, 66% of all credit card validations, and two-thirds of all 911 calls in the U.S., our decision support solutions are as reliable as they are insightful. Contact us at www.tandem.com for more information. Or call 1-800 NONSTOP, ext. 8001 for our latest DSS Manager's Kit including the new Object Relational Data Mining™ white paper.

Every second, every transaction, every customer counts.

TANDEM
a Compaq company

Come to the International Tandem Users Group Summit in San Jose, California, October 26 - 30. For information call ITUG at 1-800-461-0061, or visit us at http://www.itug.org/

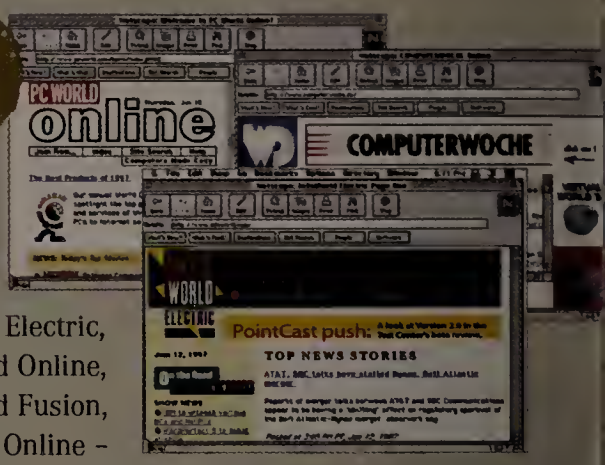
IDG.net's unique site design makes getting IT information efficient, fast and extremely easy. In short, you'll find exactly what you're looking for.



1 Stop

IDG.net is the first place to turn online for trusted information about worldwide technology trends, markets and products.

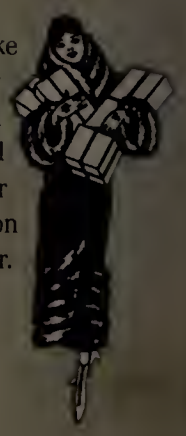
170 Web sites



IDG.net draws upon the world's largest network of technology-specific Web sites. They include @Computerworld, InfoWorld Electric, JavaWorld, Macworld Online, Network World Fusion, and PC World Online – all accessed through one gateway.

Designed exclusively for technology decision makers, IDG.net provides only the most relevant news, analysis and information.

BEFORE YOU SIP FROM THE FOUNTAIN OF INFORMATION, CONSIDER THE SOURCE.



It's like your very own personalized computer information shopper.

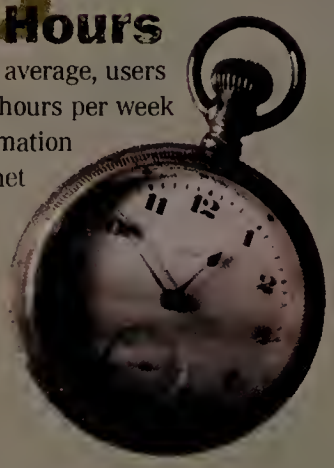
Searching for information with IDG.net delivers what you want the first time because the information comes from IDG's vast technology-specific network of more than 170 Web sites.

2000 Journalists

IDG.net draws on the efforts of IDG's award-winning editorial staff, delivering the most reliable technology news, analysis and product information.

10 Hours

On average, users spend 10 hours per week searching for information on the Web. IDG.net dramatically reduces that time by quickly providing relevant technology information.



Answers, not diversions.

IDG.net filters out useless information by staying focused only on content that is critical to those seeking technology information.

If the decisions you make are based on information gathered from the Web, turn to IDG.net first. With IDG.net, you get answers not diversions. IDG.net is not another IT megasite morass. And it's far more than a search engine. IDG.net is a gateway to more than 170 Web sites. All backed by IDG's rich vein of resources – the publications, analysts and reporters that make up the most comprehensive IT news organization in the world. The information is trustworthy, pedigreed, bona fide and just plain reliable.

30+ Years

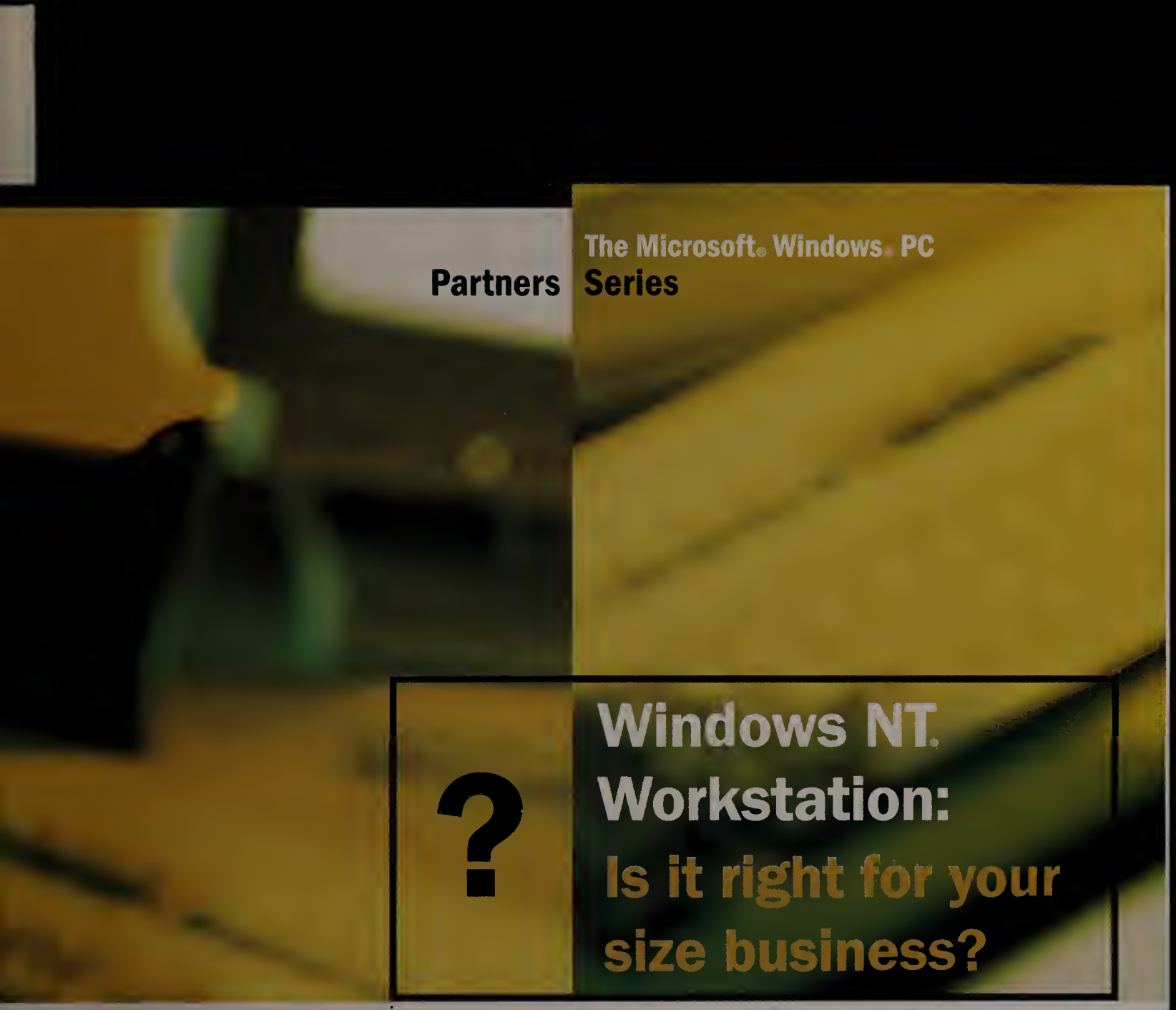
Turn to IDG.net and tap into IDG's thirty plus years of experience providing information and analysis to people who depend on it to make buying decisions.

WORLD
COMPUTERWORLD
PC WORLD
NetworkWorld
Macworld

IDG.net gives you access to IDG's global network of publications and research services in various local languages, providing the most trusted source of information online the world has to offer.

IDG.net

IDG.net. The world's most trusted source for IT information. Online. www.idg.net



The Microsoft® Windows® PC

Partners Series

? Windows NT® Workstation: Is it right for your size business?

Inside:

In the market for a new business PC?
Why pre-installed Microsoft Windows NT Workstation is your best business move yet.

If there's one thing to be learned from the explosive growth in the number of small businesses, it's that size and success aren't necessarily related. Given the right tools, a small business can perform just like a big business. The bottom line? You don't have to be big to do big things.

Keeping that in mind, Microsoft—with our PC partners Dell, Digital, IBM, and others—has created a business computing solution that can change the way businesses of all sizes work and succeed. It's Windows NT pre-installed on new PCs.

We can guess your next question: "Isn't Windows NT just for enterprises?" The fact is, no it's not. We believe Windows NT is the world's most powerful business operating system. And small businesses everywhere are using this power on new PCs with big results. Why did they choose Windows NT Workstation? Here's what they told us.

"Windows NT allows my small company to do the work of a large company."

—Arabian, Hypnotic Fx

Windows NT Workstation is dependable. "Small businesses are no different from big corporations in one important respect," says Alton Loe of OSI. "Our computers need to run just as dependably. That's why we like Windows NT. It's bulletproof." Greg Hillenbrand of Fourth Shift concurs. "For us, running Windows NT on IBM ThinkPads was a no-brainer. We've been using ThinkPads for four years—but with Windows NT, we were suddenly able to do things we'd never done before. Windows NT is safe. It's stable. It doesn't disappoint us."

Windows NT keeps your data safe and secure even under the very toughest conditions. Ever accidentally leave your laptop in a cab? Or find out that someone who shouldn't have accessed your files did? We have, too. That's why Windows NT includes integrated security. This way more than one person can use the same personal computer, but each has access only to his or her individual files. "The key reasons we had Windows NT pre-installed on our new PCs was its security and scalability," says Mike Stone, Stan Wiley Realtors. "In our business, data integrity is paramount. Windows NT allows us to guarantee complete customer privacy, as only agents with a need to know can access customer information—even on our shared PCs."

Windows NT is not complicated. Windows NT features the same familiar user interface that is in the Windows 95 operating system. "The Windows NT user interface makes everything easy," says Leoung O'Young of Digimata. "We just finished a project that, just a few years ago, we couldn't have even attempted. But now that we have a Digital Personal Workstation running

Windows NT, we can take on big projects and really deliver." Jan Denson of Pillsbury Madison Sutro LLT agrees, having recently migrated the firm to a Dell OptiPlex PC and Windows NT environment. "It hasn't been hard at all to learn Windows NT—and we've got people here who, five hours before they got their system, didn't even know what a mouse was. A little bit of training, and they're up and running. That's how easy Windows NT is."

Windows NT is a multitasking wonder. What about doing multiple tasks at once? Windows NT preemptive multitasking allows you to work fast and furiously in several applications at the same time without worrying about overloading the system. "Windows NT task switching is ... bam! It's immediate," says Loe. "Windows NT runs every application in a separate memory space, so it's like having a virtual machine for each task."

Windows NT turns you into a brilliant manager of files, folders, applications—and time. Hate filing? That's okay. Windows NT presents a view of information that makes browsing and managing files, drives, and network connections easy—and your time even more productive. "We're able to get more work done in less time; we know the status of everything. And with our Digital Personal Workstation, the 3-D work really screams," says Arabian, owner of Hypnotic Fx.

Yes! Windows NT Workstation is right for businesses of *all* sizes.

Windows NT saves big bucks. Industry analysts report that running Windows NT costs a lot less than running Windows 3.1.* And don't forget the time saved by not calling technical support and how much more work your firm can accomplish—and bill—due to increased productivity. "When you consider the return on investment," adds Loe, "you've really got to ask yourself, can I afford not to go with Windows NT?"

Windows NT is the best way to move your business into the future: a 32-bit world. Besides increased security, better performance, bulletproof reliability, and reduced costs, what else can a 32-bit operating system like Windows NT offer? Well, how about the satisfaction of a secure investment? As Denson points out, "We did the research, and it was clear to us that 32-bit was the only way to go. This was a strategic decision—our goal was to buy on the forward edge of technology." What did their research tell them? "All indicators pointed to a 32-bit environment running Windows NT."

Windows NT has a way of helping businesses of all sizes accomplish one important task: success. "It's funny," summarizes Arabian. "A lot of people think Windows NT is just for large businesses, but I think it's actually the other way around. Windows NT is the way in. Being successful has little to do with size and everything to do with how quickly you move. And I can tell you this much: With Windows NT, we're moving pretty fast."

*Gartner Group, 1996; Forester, 1997.

From our partners

Dell: built for your business. At Dell, we talk with thousands of business customers every day, and this is what we've heard. You want a powerful machine that won't become obsolete within a year (or even five). You want it configured for your specific needs. And you want it at a fair price. How do we respond to these requests? With one word: OptiPlex.

DELL®

The OptiPlex system, like all of our other offerings, isn't something we pull from stock. We build it in the exact configuration you want, fully loaded with the software you spec, from the ground up. Today, more businesses are requesting OptiPlex computers pre-loaded with Windows NT Workstation than ever before, and we think that's smart. Windows NT is a powerfully robust system, and we should know—our validation lab puts it through its paces every day. But our partnership with Microsoft goes well beyond meetings and tests. We're also working with it to create a computing road map designed to give you the ability to see further. Like all the way to the future. Long before it arrives.

Digital: approaching warp speed. At Digital, we see a tremendous opportunity for businesses of all sizes to sharpen their competitive edge by moving to powerful Windows NT–based workstations. Built for the demanding design professional, our Digital Personal Workstations can drive down costs, improve productivity, and help you harness the latest, most innovative 32-bit applications. And the results are impressive.

digital

Digital Personal Workstations unleash the true power of Windows NT Workstation to help users visualize their creations faster and more realistically. At the same time, they offer access to state-of-the-art office and personal productivity tools. It all adds up to faster time to market. Even better, the combination of Digital Personal Workstations and Windows NT offers a total cost of ownership that is 39 percent lower than that of UNIX workstations, according to a study conducted by Deloitte and Touche. See what we mean? Impressive results. And exactly what you would expect from a powerful alliance between two market leaders: Digital and Microsoft.

IBM: think smart. At IBM, we're dedicated to helping our customers get the most out of their computing solutions, and our ThinkPads are a perfect example. Working closely with Microsoft, we designed all our ThinkPads to take on the very real challenge of running Windows NT Workstation on a notebook computer—and we're happy to report that the long hours have resulted in a smashing success.

IBM®

Today, while all our ThinkPads run Windows NT, the IBM ThinkPad 770 provides what we believe is the industry's premier Windows NT Workstation implementation in a mobile platform. Every ThinkPad 770 features, among other things, full power management, Ultrabay Plug and Play, and hot plug PC Card support. Bottom line? Our customers can take advantage of Windows NT security, scalability, and reliability at 35,000 feet as easily as they can on their desktop system back at the office. Flexibility through partnership. At IBM and Microsoft, it's what we think small businesses need to succeed.

For more information on Microsoft's partnership approach to Windows NT business computing, visit: www.microsoft.com/windows/newtech/

For information on Microsoft Small Business computing, visit: www.microsoft.com/smallbiz/

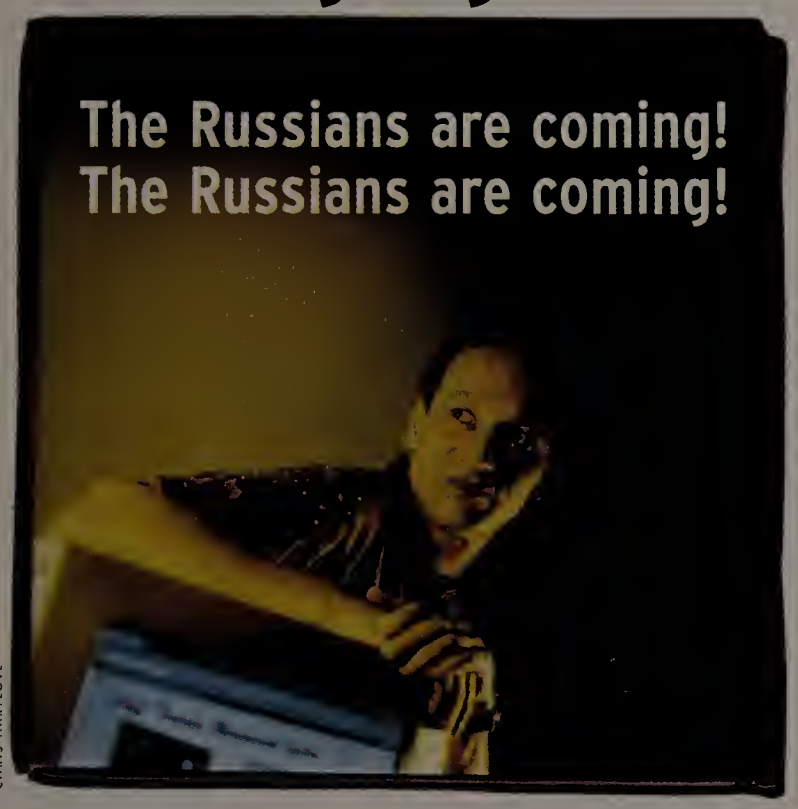
www.microsoft.com/windows/newtech/ **Microsoft®**

www.microsoft.com/smallbiz/

© 1997 Microsoft Corporation. All rights reserved. Microsoft, Windows, and Windows NT are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
Other product and company names mentioned herein may be the trademarks of their respective owners.
0997 Part No. 098-70939

LETTERS

U.S., Russia working together



CHRIS HARTLOVE

COMPUTERWORLD's article on Russian programmers ["The Russians are coming!" CW, Oct. 13] reads as though human resources managers have found a new thing to solve a short-term labor problem. Remember, education in the old Soviet Union was state-sponsored and mostly free. These guys learned how to do it for their country's specific technology base.

Russians were always brilliant theoretical engineers but lacked the resources to build expertise in applied technologies. And that's what is important in the economy of the West.

Granted, there are a lot of hard-working Russians in IT. But the fact that these newcomers have had to write efficient code means nothing in an environment dominated by Microsoft products.

I believe this industry should put these people through a basic training program to teach them advanced software engineering. We have to implement solid, long-term training programs that turn out thoughtful "knowledge workers" to solve the labor problems. Quick fixes won't do.

Marc C. Di Giuseppe
Utica, N.Y.

I READ YOUR article "The Russians are coming!" and I totally agree with it. I immigrated to the U.S. six years ago, and for the past several years I have worked in L.A. as an independent consultant on client/server systems. I am very grateful that this country gave me the opportunity to come here and be all I can be. I would have never had such an opportunity in Russia, but I got good, solid education and some experience there.

I hope that the U.S. and Russia will have much more in common through such collaboration. Thank you very much for your article.

Alexander Polishchuk
Los Angeles

Users agree with Borts' support of IBM's AS/400

THANKS FOR giving Andrew Borts the opportunity to say what most of us AS/400 users know ["In defense of the AS/400," CW, Sept. 29]. We have had a great experience with our AS/400 and will be upgrading to a new E series early next year. Those information technology snobs who have never worked with or programmed on an AS/400 don't know what a low-cost workhorse it is. The only drawback to being an AS/400 RPG programmer is explaining to all of the uninitiated what the heck it is.

Terry Rountree
Senior programmer/analyst
Business Archives
Houston

AS A BUSINESS software developer working mainly on the AS/400, I am pleased to see Andrew Borts' positive (if feisty) commentary on the machine.

The AS/400 isn't cool, but then, neither is business software. The companies I work with use the AS/400 along with Windows NT Server, leveraging the abilities of both. NT is great for many things, but it doesn't come close to the AS/400 for processing business data.

Steve Page
Indianapolis
scpage@indy.net

Reader takes issue with claims by Strassmann

THERE HE goes again. Once more, Paul Strassmann claims that computers reduce productivity ["Computers have yet to make companies more productive," CW, Oct. 15]. This time, his claim is based on the fact that Sales, General and Administrative expenses increased as a percent of Costs of Goods from 1987 through 1993. Suppose that using computers has made my organization more efficient in terms of the purchase of raw materials (e.g. via reducing waste), labor (reducing rework), etc. Then I can sell more goods while reducing the cost of goods.

Why not consider the profitability of U.S. corporations as a measure? Profitability generally increased over the same period. So perhaps computers have improved productivity after all. Strassmann's logic seems to imply that managers of most U.S. corporations are idiots. Otherwise, why would they waste money on computers? I find that conclusion hard to accept.

Perhaps because the organizations for which he was chief information officer (Xerox and the U.S. Department of Defense) had difficulty using computers to improve productivity, Strassmann feels that all organizations have this problem.

Ed Kimball
Ann Arbor, Mich.
ed_kimball@notes.pw.com1

IS hirers should look past disabilities to fill positions

MY 27-YEAR-OLD son is approaching the fourth anniversary date of receiving his B.S. degree in computer science, and he is still without any job prospects in the field. This shortage of skilled personnel that your weekly paper continues to report on is lost on me. It seems that the employers of IS personnel will not look beyond the possibilities, only the apparent lack of meeting "standard criteria" for meeting the objectives of a job.

The fact that my son held down various temp jobs in another field means nothing. The fact that he was able to complete his degree without any assistance from any support department on campus means nothing. But the fact that he "acts different" and is unable to carry on a social conversation with an interviewer means everything.

Unfortunately, the Americans with Disabilities Act does little or nothing for the person who has a "mental" problem. Human nature is such that one is more readily willing to accept a physical rather than a mental disability. One you can probably see and know what adjustments have to be made in the workplace. The other you can't and are unwilling or unable to find out if there really is a diamond under the dirt.

Ron Steinleitner
Allentown, Pa.
rsteinleitner@enter.net

Indianapolis offers a lot

AS A RECRUITER for a rapidly expanding IT service provider, I pay close watch to your IT Careers Regional Scope pages. I would suggest that you consider including Indianapolis. It is a city with the second-largest number of insurance company headquarters and the home of the largest mail-order cataloging firm, the largest CD distribution center, the largest student loan firm and two major pharmaceutical companies.

Jessica Shevitz
Galaxy Systems, Inc.
Indianapolis
jshevitz@galaxi.com

Phrases such as 'World Wide Wait' make reader's day

EDITOR PAUL GILLIN's "Caveat Surfer" column [CW, Oct. 6] was much appreciated. I loved the phrases "World Wide Wait" and "exquisite irony." Maybe Paul would be interested in compiling a list of the Top 10 Web Sites to Die For — which indicates how long it takes their pages to load. Anyway, thanks for saying something no one has said. I was beginning to think I was just a Type A person drinking entirely too much coffee for my own good.

Linda Gonse
Wildomar, Calif.

Will the real revenue producers please stand up?

I WAS ASTOUNDED by Michael Schrage's column ["Rocketing IS salaries: The party's over," CW, Oct. 6]. He misses a key point that totally undermines his entire argument: that technology provides competitive advantage.

It was particularly ludicrous to talk of salespeople as "real" revenue producers. Ask Michael Dell if the guys who built Dell Computer's online Web-based computer ordering system, which is doing a million dollars per day in business, are real revenue producers. Ask the banks, insurance companies, manufacturers and, yes, even IT consulting companies that leverage information technology to provide better products and services to customers whether their billions of dollars of investments in IT are revenue producing.

When salaries go up (and the image of the hapless geek is left behind), more talent will be enticed into the field. It may never be enough to meet demand, though, because the bottom line is, this stuff is "rocket science," and the average Joe produced by our public school systems cannot handle it.

Ron Hodges
Principal systems engineer
Computer Data Systems, Inc.
ron_hodges_at_cdsi@
mail.cdsi.com

Bad IS days could never compare to Auschwitz

NOTHING COLUMNIST Allen Alter could write would ever convince me that a bad day in IS is comparable to a day spent in Auschwitz ["A voice from Auschwitz speaks to IS," CW, Oct. 20].

Although we may all derive personally meaningful messages from the testimonies of those who suffered in the Holocaust, I cannot imagine using Viktor Frankl's words to reassure me that I could endure "projects that some [IS professionals] have likened to death marches."

There are tragedies, and there are jobs. The tragedy lies in not knowing the difference.

Heather Pisani-Kristl
Cambridge, Mass.
kristl@fas.harvard.edu

MultiSync is a registered trademark and A500, A700, E500, E700, E1100, CromaClear, OSM and "Expect more. Experience more." mark and icon are trademarks of NEC Technologies, Inc. All other trademarks or registered trademarks are the property of their respective holders. ©1997 NEC Technologies, Inc.

2 A TEACHER DISCOVERED *that Christian would respond to images from his life. She put visual cues to the story of his new puppy on a special keyboard.*

3 THE MONITOR BECAME HIS VOICE. *With it he makes class reports and conversation. And keeps up with his class in the regular Osterville, MA public school system.*

4 WITH THE PICTURES, HE MAKES SENTENCES. WITH THE SENTENCES, HE MAKES FRIENDS. *Christian's monitor is the window between his non-verbal world and the speaking world of his friends. Through it, he teaches them many things.*

Christian Murphy was non-verbal. He lived with a wall between himself and the world.

1 THIS IS CHRISTIAN. *He was born with autistic tendencies that cut him off from the world around him.*

Until he found this window.

THE MONITORS THAT ARE BEST FOR CHRISTIAN'S NEEDS *can also speak to yours. Introducing the NEC MultiSync® performance-driven Enterprise and value-oriented Advanced Series monitors. They feature superior, lifelike images. And the kind of flexibility that super high resolutions and refresh rates ensure.*

To that end, OSM™ (On-Screen Manager) controls make image adjustments easy. Plus, select Enterprise monitors feature CromaClear™ CRT technology, for unparalleled focus, contrast and intense color saturation.

And, of course, the industry-leading NEC warranty includes 3 years parts, labor and CRT.

For more information call 1-800-NEC-INFO or visit www.nec.com.

MULTISYNC® MONITORS				
	Max Res	Bandwidth	CRT Type	Pitch
A500	1280 x 1024 @ 60Hz	112MHz	Dot Trio	0.28mm dot
A700	1280 x 1024 @ 65Hz	119MHz	Dot Trio	0.28mm dot
E500	1280 x 1024 @ 65Hz	119MHz	CromaClear	0.25mm mask
E700	1600 x 1200 @ 65Hz	177MHz	CromaClear	0.25mm mask
E1100	1600 x 1200 @ 65Hz	177MHz	Dot Trio	0.28mm dot

Expect more. Experience more.

NEC

Corporate Strategies

Case Studies • Trends • Outsourcing

Briefs

A survey of 128 IS executives in 14 industries found:

16% Have a full-fledged strategy in place to achieve year 2000 compliance

24% Have a detailed year 2000 plan in place

Source: Rubin Systems, Inc. on behalf of Cap Gemini America, New York

State preps for 2000

Maryland awarded a $100 million year 2000 contract to several contractors to provide millennium-compliance services to more than 40 state agencies and departments, including community colleges. They include BDM International, Inc. in McLean, Va., and Integrated Software Solutions, Inc. in Seattle.

Recovery online

SunGard Recovery Services, Inc. in Wayne, Pa., lets small and midsize businesses subscribe to disaster recovery services over the Internet. The DR Made Simple program lets companies set up an annual recovery services contract through SunGard's home page (*http://recovery.sungard.com*).

Monsanto lays tracks

Monsanto Co. has signed a licensing agreement to use Simulation Sciences, Inc.'s OpenYield software to track production and materials among four plants. St. Louis-based Monsanto expects to begin implementing the yield accounting software by year's end. Simulation Sciences is based in Brea, Calif.

Java for banks

Meca Software LLC, a financial software consortium owned by a group of banks, formed an alliance with Sun Microsystems, Inc. in Mountain View, Calif., to develop Java-based financial services applications such as planning calculators and electronic bill-payment systems.

•Online commerce

Scare sparks site revamp

By Patrick Dryden
DALLAS

LIKE MANY companies, Pegasus Systems, Inc. first put some pages up on the World Wide Web as a sideline.

TRAVEL INDUSTRY

Then a "scary" reality hit: That sideline would become a major business conduit. So Pegasus information systems managers had to revamp the site to make content more manageable and to accommodate rising traffic and the need to deliver Web pages quickly.

Launched in 1994, TravelWeb (*www.travelweb.com*) simply provided brochures that described hotel properties and some search capabilities. The service helped promote Pegasus' real business of handling transactions among 13 of the 15 largest hotel chains in the world and four global reservations systems.

TOO MANY PAGES

But the site quickly grew to offer about 30,000 static pages. Updating information or adding features page by page became tedious, expensive and too slow, said Steve Reynolds, vice president of IS at the Pegasus office here.

The situation worsened when Pegasus added a second Web server in December 1995 to let customers book reservations online. Activity soared, and Pegasus decided to make TravelWeb a strategic service for its hotel partners. But the fledgling site was not designed for such growth.

"We would potentially have to double the 30,000-page static site when we brought in new hotels or booking agencies, then do it again for the next one," Reynolds said. Pegasus was outsourcing the page update process, and traffic volumes on the site were rising precipitously, he said.

The services offered by Pegasus constitute one of the Web's more fertile grounds for online commerce.

Consumers are more comfortable buying hotel reservations on the Internet than other products or services, ahead of software, online subscriptions and airline tickets, according to a survey by Yankelovich Partners, Inc., a New York-based market researcher.

Forrester Research, Inc. in Cambridge, Mass. predicts the market for online hotel bookings will leap from $345 million

Web pages, page 44

The State of Colorado's David Usery: "There was some skepticism that people could work together on this"

By Craig Stedman

OLD TECHNOLOGY habits die hard. And that can make life tough for IS managers who have to pull together a diverse mix of well-entrenched systems and for the users who are fiercely loyal to the machines they know. Just ask David Usery.

Usery is in charge of a $3.2 million project to link the information systems of Colorado's five state criminal justice agencies. Even with a legislative mandate behind him, getting everyone to pull in the same direction has required a careful blend of carrots and sticks.

"You can't mandate away turf wars, and you can only lead so much by brute force. It's a delicate balance," said Usery, the chief information officer on the integration project.

"People hold on to information because it is power."
– Dottie Wham, Colorado senator

Colorado gave up on trying to make the agencies converge on a common platform. The project, which is due to go live in January after 18 months of development, uses Sybase, Inc.'s middleware to transparently map data among different systems. End users still will work within their familiar desktop interfaces, Usery said.

But if things work as planned, users will get seamless

State users', page 44

Privacy can be lost in background checks

▸ *Companies must weigh against need to know*

By Kim S. Nash

EVER MISS a loan payment? Get into a legal scuffle with a colleague? Not only is such personal information not private, but it also is often uncovered by routine pre-employment checks.

Yet the technology hiring crunch has created a catch-22 for employers hot to hire talented job prospects.

If companies don't do them, they may get some bad apples and even face lawsuits for negligent hiring [CW, Oct. 27]. But employers also must be careful not to trample applicants' pri-

Background checks, page 44

THE COST OF A BACKGROUND CHECK

Fees to obtain pieces of a job applicant's personal and professional history

Company	Type of check	Price
World Information Network, Tacoma, Wash.	Address history, verification of Social Security number, criminal check and driving history	$80
	All the above, plus civil check, credit report and past employment verification	$125
Information Resources, Torrance, Calif.	Criminal check	$35
	Education history, previous employment, driving history, credit report, and criminal and civil actions	$100

State users' doubts met with political tact

CONTINUED FROM PAGE 43

access to information from other agencies that previously was available only in paper form, if at all. That would give police officers, judges, prosecutors and corrections officials more complete pictures of the suspects and criminals with whom they must contend.

"Even the parole board hasn't had good information at their fingertips," said Dottie Wham, a Colorado state senator who chairs the legislative body's Judiciary Committee. "They're still doing things on paper, and it's just very slow and inefficient."

But the promise of improved public safety didn't make the integration project an easy sell. It has taken nearly 10 years of haggling and strong-arm tactics such as budgetary threats to get to the agencies to cooperate, Wham said. "People kind of hold on to information because it is power," she said.

Such squabbling also could endanger corporate integration initiatives, said Lesley Kao, a state and local government analyst at G2R, Inc. in Mountain View, Calif. But government agencies are especially wary of losing autonomy, she said. "There's a fear that other departments might wreak havoc on their data," Kao said.

It helped that the executive directors of the Colorado agencies finally signed on. But even then, Usery said, he and his staffers had to work delicately to guarantee each agency an equal say in decisions and to foster the impression "that you're going against the grain if you're against this."

Then came the technology considerations.

Usery gathered about 40 IS workers and end users for weekly meetings between last December and June, and together they hammered out a 2-in.-thick set of text and flowcharts that documented how things get done at the various agencies. That was used to develop business rules to govern the sharing of data.

Colorado's integrated criminal justice system will make it easier for judges to get data on the defendants they see

The users initially brought "an element of cynicism" with them, and disagreements were common along the way, Usery said. But the project team worked to create "the communal view that we could all bail ourselves out of hot water by doing this," he said.

Colorado will use Emeryville, Calif.-based Sybase's EnterpriseConnect middleware and SQL Server 11 database to shuttle data among the agencies' systems, which include an IBM AS/400, a Digital Equipment Corp. VAX, a Hewlett-Packard Co. HP 3000 and two Unix servers from Sequent Computer Systems, Inc. in Beaverton, Ore.

Virtually all the state's criminal justice data will still be stored in the various systems. The 40G-byte SQL Server database will hold just the names and case numbers of offenders, and pointers will let end users get at more detailed information in the agency computers, Usery said.

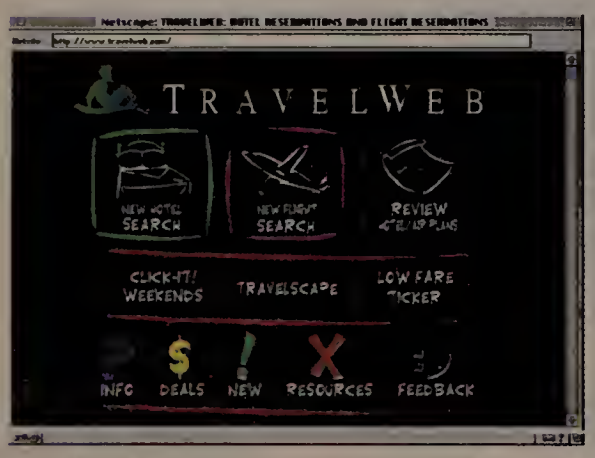
But even with everyone now on the same page, interagency trust goes only so far. All SQL database calls will go against a set of global stored procedures in SQL Server rather than directly from system to system. The agencies still aren't comfortable about giving direct SQL access to outside users, Usery said. □

IS puts Web pages in order

CONTINUED FROM PAGE 43

this year to $2.9 billion in 2001.

"It was very scary to look six months to a year ahead," Reynolds said.



About 33,000 customers spend an average of six minutes per visit to Pegasus' Web site

The solution is apparent now: Build a dynamic site that links pages to content stored in a central database for easy updates.

Pegasus management last year approved the conversion of TravelWeb from a static to a dynamic architecture. Officials said they wanted an adaptable site so that a hotel or agency could put its interface on common information quickly with a low cost for creation and maintenance.

For a site the size of TravelWeb, however, database connectivity tools were scarce, of limited capabilities and slow, Reynolds said.

The biggest problem was the lack of development experts in Netscape Communications Corp.'s LiveWire to rebuild the site on an Informix Software, Inc. database, Reynolds said.

"We had to try and try again to tune performance. It was inefficient, but the only option we had," he said.

To keep on schedule, Pegasus' IS staff tried to stay away from unknown technologies elsewhere.

Servers from one vendor, Sun Microsystems, Inc., are redundant for fault tolerance and scalable in processing, memory and storage for growth, said Trae Chancellor, technical services director at Pegasus.

Three months after the dynamic version of TravelWeb went online in March, traffic on the site exceeded Pegasus' capacity, forcing the company to hire a new Internet service provider. Pegasus shifted to San Francisco-based Genuity, Inc.

Genuity's backbone provides high speed, redundancy and bandwidth adaptability, Chancellor said. Adaptable bandwidth is important at midday, he said, because "so many customers seem to book reservations during their lunch hour."

Today, TravelWeb supports more than 17,000 hotel properties through 42,000 dynamically generated pages.

About 33,000 customers spend an average of six minutes per visit.

Partners in the TravelWeb service can remotely modify information themselves. And best of all, Reynolds said, the response time for a dynamically generated page is now just hundredths of a second slower than that of a static page. □

Background checks

CONTINUED FROM PAGE 43

vacy rights in the process.

"It used to be, in the old days, they would only check out the management-level people. Now it's all levels because there's liability at every level," said Paulette Hiebert, a vice president at Information Resources, a background checking firm in Torrance, Calif.

State and federal hiring laws try to find a balance between employers' right to know and employees' right to privacy. For example, applicants must approve, in writing, a request for financial records. But employers can get lots of information without a signature.

Criminal checks, for example, are typically run in every town or county where a prospect says he has lived and in any other addresses revealed in credit reports.

But by law, past criminal activities can't be held against a worker unless they are germane to the job. A conviction for breaking and entering, for example, would probably disqualify someone for a job as an onsite PC repair technician. On the other hand, a conviction for stealing a car wouldn't necessarily preclude a programming job.

Companies can also check an applicant's civil court history to see if he has sued or been sued by a previous employer.

For example, Gateway 2000, Inc. 18 months ago began to conduct detailed checks, which has helped cut turnover by a half, a company officials said.

PRYING EYES

Some would-be bosses even want to know what the law prevents them from knowing.

"We do get requests from companies for information that we know we're not allowed to give out," such as medical histories, said Lisa Haugaard, manager of information systems at World Information Network LLC in Tacoma, Wash.

Information on a worker's previous compensation claims can be obtained, but only after the person is hired by the new employer. All the checkers interviewed denied they would fulfill illegal requests, but they said a black market exists for personal information.

For example, some companies want immigration data on foreign-born job seekers. Asking for the data isn't illegal, but it must be obtained through a district office of the U.S. Immigration and Naturalization Service or Social Security Administration, Haugaard said.

"We can verify whether a number on a 'green card' is valid, and that's about it. And that has to be done through the Immigration office," she said.

Yet some requesters, under the gun to get the goods fast, will hire black marketers who buy and sell immigration data, Haugaard said. "They want it the sneaky way." □

Cisco Powered Network™

BEFORE YOU LET A COMPANY CONNECT YOUR BUSINESS TO THE INTERNET, ASK YOURSELF, "WHO CONNECTS THEM TO THE INTERNET?"

If the answer is Cisco, you know your network service provider is supported by the products and technology that brought the Internet to business. In fact, the Internet as we know it today is built on Cisco equipment.

Cisco Powered Network™ service providers are equipped to make your network work for you. Whether it's Internet access, ATM, frame relay or other data services, you will know your business is getting the quality it can depend on.

Look for the new Cisco Powered Network mark or visit our Web site at www.cisco.com to find out more about the participating network service providers. Either way, you will know your provider is committed to giving your business the most in reliable, secure and innovative service. And you will know it's powered by Cisco – the company that makes the world's networks work for business.

CISCO SYSTEMS

The Network Works.
No Excuses.℠

©1997 Cisco Systems, Inc. All rights reserved.

RS/6000

E-BUSINESS SOLUTIONS

Locates pup tents, hiking boots and the elusive customer.

Where do today's leading-edge retailers discover new opportunities for growth? We guided REI, a well-known outdoor outfitter, to the IBM RS/6000®. Using proven e-business solutions, we showed REI how an RS/6000 can use the power of the Internet to reach new customers. We easily integrated it into their existing systems. And, because RS/6000 solutions are remarkably scalable, REI needn't worry about turning away business. How can the RS/6000 supply your business with a powerful e-business tool? For the solution that fits your needs, drop by www.rs6000.ibm.com/solutions or call 1 800 IBM-2468, ext. FA056.

IBM ... ions for a small planet is a trademark of IBM Corp. All other company ... trademarks of their respective companies. ©1997 IBM Corp

Solutions for a small planet™

IBM.

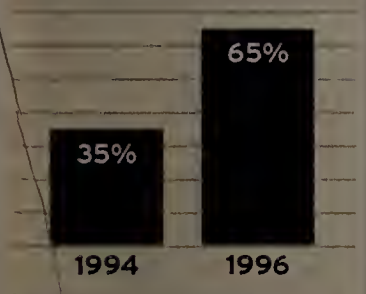
The Internet

Electronic Commerce • The World Wide Web • Intranets

Briefs

INCREASINGLY WIRED

U.S. public schools connected to the Internet



Source: The Internet Index, published by Open Market, Cambridge, Mass.

Web mail

Control Data Systems, Inc. in Arden Hills, Minn., is shipping Rialto IntraStore Server 98, an upgrade of its World Wide Web-based messaging and directory server that now includes built-in virus scanning and support for the Secure Sockets Layer security protocol. It also supports message filtering and has a new search engine for use with electronic mail, bulletin boards and public folders. The Unix version is available now for $2,000 per server. A Windows NT version, at $1,600, will ship next month.

Antipiracy tools

Intraware, Inc. and Netscape Communications Corp. announced a software management program that includes a Come Clean Campaign designed to reduce corporate software piracy. Firms will get a set of online tools that make it easy for them to keep Netscape licenses up-to-date using Intraware's SubscribNet electronic upgrade notification and delivery service.

Intranet file manager

Micro Tempus, Inc. in Montreal, announced an Internet/intranet file manager for Microsoft Corp.'s Internet Explorer 4.0 browser. Tempus Connectivity Solutions (TCS) was designed to enable users to move files securely using the drag-and-drop graphical interface of Internet Explorer.

Micro Tempus is a software company that focuses on cross-platform data movement. TCS is expected to ship this month.

Internet-based training passes audit

▸ *Coopers & Lybrand Web site provides tax info*

By Nancy Dillon

KEEPING UP-TO-DATE on new tax laws can be daunting for corporate tax professionals. But that crucial task may get a little easier next month with the debut of Coopers & Lybrand LLP's Virtual Campus World Wide Web site.

ONLINE EDUCATION

An estimated 2,000 subscribers of Coopers & Lybrand's Tax News Network, plus 3,000 company staffers, will have access to the online training Web site that includes a two-hour course on new tax legislation.

"The key to the online education market is anytime, anywhere training," said Ellen Julian, an analyst at International Data Corp. (IDC) in Framingham, Mass. IDC studies project the online training industry will grow to $28 billion per year worldwide by 2001, she said.

The password-protected Coopers & Lybrand site, which will debut next month, will have many of the features of a physical campus, including a registration building and classrooms. Coopers & Lybrand supplied the site's content to University OnLine Publishing, Inc. (UOL), a McLean, Va.-based on-

'net-based training, page 48

"The ability to follow the natural rhythms of education with real-time interaction is exciting."

– Conrad Scott-Curtis, Stanford University

NANCY DILLON

Users access SQL data via intranet

By Carol Sliwa

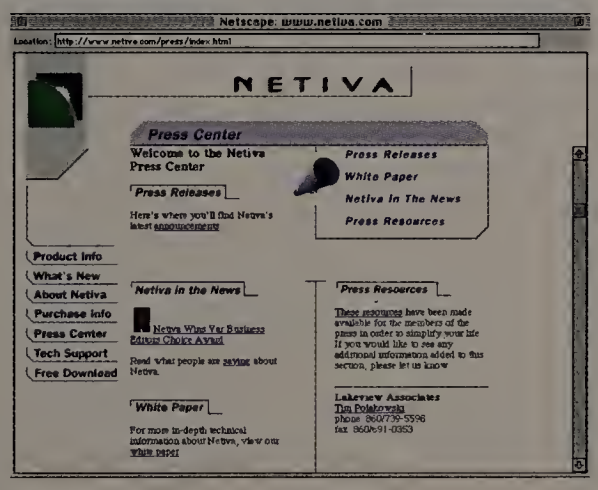
ONLY FOUR MONTHS after launching its first product, Netiva Software Corp. in Campbell, Calif., is shipping an updated version of its software for developing and deploying databases over intranets.

Netiva 2.0, which shipped last week, now lets users gain access to information stored in SQL databases. The previous version, which shipped in June, allowed access only to a local, proprietary Netiva database or to desktop databases.

For the County of Santa Clara in California, the software package came at the right time. The collector's office transferred 600,000 property tax records from a mainframe to a relational database from Sybase, Inc.

Because the county has a working intranet, the tax office

SQL data, page 48



Netiva 2.0 now accesses SQL databases in addition to proprietary or desktop databases

•By issuing bulletin on countermeasures . . .

. . . Response team targets spam epidemic

By Sharon Machlis

IN ANOTHER SIGN that junk electronic mail is becoming an increasing administrative headache, an organization known for helping to combat viruses and hack attacks has issued its first advisory on spam.

A year ago, the Computer Incident Advisory Capability (CIAC) team at the U.S. Department of Energy received almost no complaints about unwanted messages. "Now, we're getting several a week," said team member William J. Orvis at Lawrence Livermore National Laboratory in Livermore, Calif. "People are just starting to reach their level of frustration."

In its recent bulletin on spam countermeasures, the

Response team, page 48

Spam filtering strategies

For a single account
http://spam.abuse.net/spam/tools/mailblock.html#filters

For an entire site
http://spam.abuse.net/spam/tools/mailblock.html

IP connectivity from spam sites
http://spam.abuse.net/spam/tools/ipblock.html

REVIEW▸ *Office supply Web sites*

Office vendor Web expertise is out of stock

By Frank Hayes

IF BRINGING IN customers is the key to a successful business, then office-supply superstores seem to have it nailed. Bright, attractive stores have made names such as Office Depot, Staples and OfficeMax into household words, as throngs of customers turn to them for everything from paper clips to computer supplies.

But making the transition from an appealing brick-and-mortar store to a customer-friendly World Wide Web site has turned out to be a challenge for these companies that have revolutionized the once-sleepy stationery business.

If the big boys aren't careful, that stationery-store revolution could happen all over again.

Office Depot, Inc. in Delray Beach, Fla., is the biggest of the office superstores, but it doesn't have a public U.S. Web site at all. It does have a Mexican site and has made a major commitment to a private extranet. However, Staples and OfficeMax have Web sites, but they have stumbled when it comes to duplicating the convenience of their stores on the Internet.

Office supply sites, page 49

'net-based training

CONTINUED FROM PAGE 47

line training company. UOL handled the programming and will track and record enrollment, testing, grading and site maintenance.

"We've made this type of information available internally in the past, but until now, there wasn't a cost-effective and timely enough way to get it out to our clients," said Dennis Sheriff, tax relationship manager at Coopers & Lybrand in Parsippany, N.J. "One of the nice things about the site is that we can keep adding more with little overhead."

Sheriff said he does expect several challenges with the site's deployment, however.

"Will the dogs eat the dog food is the real question," he said. He explained how he plans to monitor performance carefully because user acceptance is closely linked with download time and browser compatibility.

POPULAR PLAN

Those issues challenge any Web-based training application, but the popularity and accessibility of the Internet are drawing more trainers online.

Instead of using a third party to program publishable curriculum, the Stanford University Education Program for Gifted Youth (EPGY) is using software on its own servers to conduct live, interactive classes over the Web. EPGY, in Stanford, Calif., is one of the nation's top continuing education programs for gifted kindergarten through university-level students.

JAVA APPLICATION

The Java-based software is Symposium from Lexington, Mass.-based Centra Software, Inc. It combines multipoint audio into its online program so EPGY students around the country no longer need two telephone lines — one for a computer modem pool and one for a conference call bridge — to call in to classes.

Symposium also integrates existing computer-based training applications, live application sharing, chat rooms and instructor-led whiteboards and group Web browsing sessions.

"The ability to follow the natural rhythms of education with real-time interaction is exciting to me," said Conrad Scott-Curtis, coordinator of English education at EPGY. EPGY plans to use the program to teach English, math and physics to 60 students during the next year.

MCI Systemhouse, the education and systems integration arm of Washington-based MCI Communications Corp., uses Symposium for sales staff training. Roger St. Germain, vice president of education services, said he will use the software to orient up to 50 salespeople at a time to MCI Systemhouse products.

"When we have a new software product to sell, we can bring our agents from around the world online, walk them through a demonstration as a group and accept questions and input," he said. St. Germain added that an instructor-led program is more effective than sending out a demo CD-ROM with the hope that agents will adequately review and understand the material.

Symposium 2.0 shipped last month and runs on Unix, Windows 95 or Windows NT. It costs $35,000 per server with up to 50 users. Similar instructor-led programs include LearnLinc I-Net from Interactive Learning International Corp. in Troy, N.Y., and PlaceWare's Auditorium from PlaceWare, Inc. in Mountain View, Calif.

"Companies are learning that while there can be an initial high cost for online training tools, delivery of the tools over the Web is inexpensive," Julian said. "Over the long term, online training saves time and money." □

Response team targets spam flood

CONTINUED FROM PAGE 47

CIAC advised that scanning information in message headers, then filtering unwanted material is the most effective antispam strategy. For example, an administrator can block messages from mail programs that are popular with spam generators, such as Floodgate, Extractor, MassE-Mail and others.

System administrators also block mail from known spammers. However, those methods run the risk of blocking mail from legitimate users as well as spammers, the CIAC cautioned. And spammers typically use different accounts for every mailing to thwart individual blocking attempts, making filtering a less-than-perfect solution.

NOD IN AGREEMENT

The Internet Mail Consortium agreed. "Many of the technical solutions will alleviate some of the problems today but do not adapt well to smart, motivated, uncooperative, unsolicited bulk E-mail creators," the group concluded in a report last month on spam.

Sending requests to remove a name from a bulk mailing list is pointless with most spammers, Orvis said, although legitimate businesses will usually honor such requests. Fly-by-night bulk E-mailers, though, will probably only use a remove message to verify that the address is valid and that the recipient actually opened and looked at the mail.

PAY THE PRICE

Unless legislation is passed limiting spam or requiring it to carry identifying marks, there is little legal recourse for victims if the message isn't touting something illegal. Meanwhile, spam is becoming a price administrators and users must pay if they wish to remain open to all correspondence on the Internet.

At Bell Atlantic Corp. in Marlboro, Mass., tight security aimed at preventing malicious code from infiltrating the computer network also effectively blocks spam, according to staff director Doug Savary. Any individual who wishes to send E-mail to the engineering staff at the company must first be put on an approved list. That can keep out legitimate business mail, Savary admitted, but security demands justify the policy, which gives the added benefit of screening out junk. "It's a price we are willing to pay," he said. □

Nonexpert users get Pretty Good Privacy

▸ *Tool kit adds security features to applications*

By Rebecca Sykes

PRETTY GOOD PRIVACY, INC. (PGP) last week introduced the PGPsdk tool kit, which was designed to let corporate developers and systems integrators who aren't cryptography experts add security features to applications.

The PGPsdk tool kit is available for development on Windows 95 or Windows NT, Macintosh, Sun Microsystems Inc.'s Solaris 2.5 and Linux platforms.

Features include the following:

- Minimum cryptographic strength of 128 bits.
- Cross-platform C and C++ language application programming interface.
- Support of PGP/MIME for secure communication among different electronic-mail applications.
- The ability to integrate with a certificate server.
- Access to a wide selection of royalty-free ciphering and hashing algorithms.
- Secure cryptographic routines for fast performance in real-time applications, including encryption, decryption, digital signature and verification.

PGPsdk is available now for $895, plus additional charges depending upon the number of users.

Officials said the tool kit will also be available within a month on the company's World Wide Web site at *www.pgp.com*. □

Sykes writes for the IDG News Service's Boston bureau.

Snapshot

U.S. INFORMATION SECURITY MARKET

	1992	1996	2001*
Hardware	$282M	$520M	$1.05B
Software	$286M	$745M	$2B
Services	$136M	$340M	$950M
Total	$704M	$1.6B	$4B

*Projected

Source: The Freedonia Group, Inc., Cleveland

SQL data over intranet

CONTINUED FROM PAGE 47

wanted to create a way for employees to access those records through a web-centric application. For years, staffers had been using cumbersome microfiche reports.

NO EXPERTS NEEDED

The Netiva software lets users who don't have in-depth knowledge of Java or Hypertext Markup Language create the inquiry screens that launch queries on the Sybase database, said James Rusnak, director of information systems for the county.

"You can basically produce applications in days or weeks that would normally take many weeks or months to do," he said.

The Santa Clara tax collector's office also uses the Netiva database to store information entered by clerks when they accept payments at the counter. In the past, days would go by before the files got posted to the system. Staffers now will have instant access to those records.

Netiva 2.0 consists of the following three pieces:

- A Designer for building intranet database applications.
- An application/database server that makes applications available to multiple users, processes application logic and stores data.
- A Java applet that runs in the web browser, allowing users to connect to the server then display or run the applications locally.

The Netiva software runs on Windows NT and Windows 95. A license for two concurrent connections to the server costs $4,999. □

Don't mess with the millennium bug—take your best shot! Here's your automatic weapon.

ADAPT/2000

One tool *addresses all the needs* and *automates all key phases* of year 2000 projects, with built in RAD and code re-engineering capabilities that will provide value *beyond the year 2000*.

ADAPT/2000

COBOL SOURCES, COPYBOOKS, SCREEN DEFINITIONS JOB CONTROL, DATA DEFINITION LANGUAGE (DDL)

IMPACT ANALYSIS

- Rules based
- Code parser, Data aliasing, Data analysis
- Detailed analysis by program, copy element, job script, date field
- Summary analysis, resource and cost estimates

AUTOMATED DATA UTILITIES

- Data dictionary
- Rules based
- Code generator
- New DDL
- Outputs programs for:
  - Data conversion
  - Data bridging
  - Data aging

AUTOMATED SOURCE CONVERTER

- Rules based
- Detailed comments
- Expansion, windowing or encapsulation
- New copybooks, source code
- Logic changes
- New data definitions

CODE EDITOR, RAD TOOLS, DATE ROUTINES

- Search, copy, replace
- Multiple windows
- Library of date routines, with source code
- Report writer
- Application builder

MODIFIED APPLICATIONS

Allegiant Legacy Solutions—one company that provides a full range of year 2000 services including year 2000 project management, turnkey impact analysis and remediation.

Call us now for your ammunition at 888-YR2K ALS (888-972-5257)

ALS ALLEGIANT LEGACY SOLUTIONS

A Division of NeoMedia Technologies, Inc.

Sun microsystems Value Added Reseller

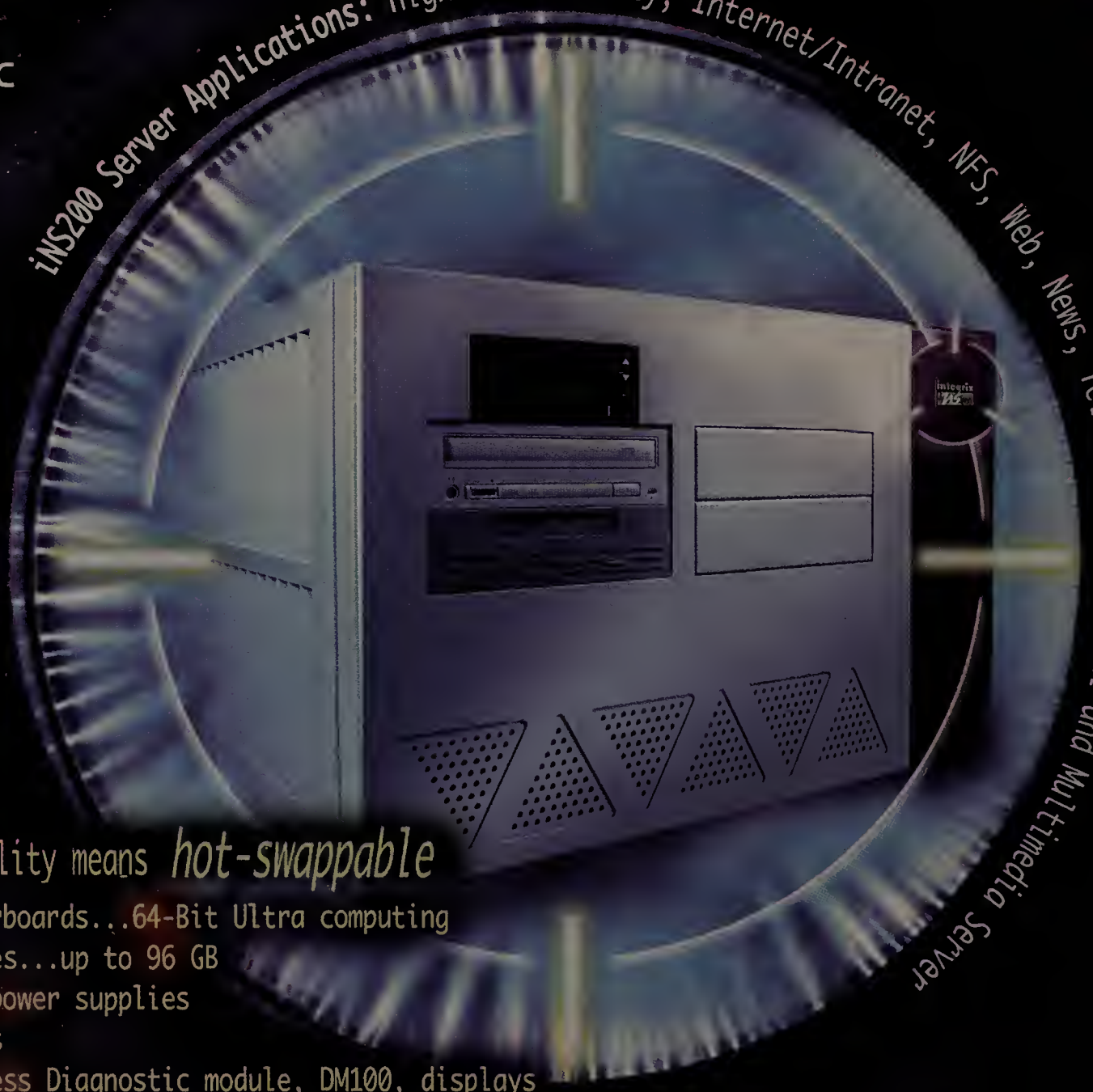
Bringing Legacy Applications into the 21st Century

11025 Reed Hartman Highway, Cincinnati, OH 45242 • Phone: 513-984-1822 • 888-YR2K ALS (888-972-5257)
Fax: 513-984-2438 •E-Mail: gluntz@iglou.com • Web Address: http://www.allgnt.com

For Total Network Reliability

Set Your Sites on the integrix Network Server iNS 200

ULTRASPARC DRIVEN



Superior reliability means *hot-swappable*

- Dual motherboards...64-Bit Ultra computing
- Disk modules...up to 96 GB
- Redundant power supplies
- Fan modules
- Remote Access Diagnostic module, DM100, displays critical system status to maximize up time
- 3 expansion trays with 19 SBus slots support your growing network requirements

That's reliability.

The Network is Watching

Network reliability is your main focus. You need a server that won't let you down. The Integrix iNS200 increases your network reliability by increasing your **uptime**. It integrates easily into your existing network environment to keep your enterprise up and running. Today's enterprise demands stable performance, the iNS200 meets those demands head on with options to fit your networking needs.

Take aim at the scaleable, reliable and affordable iNS200. Build your network with Integrix, the leader in expansion solutions.

Be online with the future. Plug in Integrix for networking solutions that work.
http://www.integrix.com.

integrix

Corporate Headquarters
2001 Corporate Center Drive
Newbury Park, California 91320 USA
Tel: 800-300-8288 / 805-376-1000
Fax: 805-376-1001
Email: sales@integrix.com
http: //www.integrix.com

Asia
Beijing, P.R.China
Tel: 8610-6253-5305
Fax: 8610-6253-5306
Seoul, Korea
Tel: 822-515-5303
Fax: 822-515-5302

iNS and iNS are trademarks of Integrix, Inc. SPARC & UltraSPARC and all other trademarks mentioned are the property of their respective companies
USA internationally supported

Office supply sites

CONTINUED FROM PAGE 47

That has left the door open for competitors, both large and small, who are carving out their own pieces of the office-supply market on the Web. But whether they will be able to duplicate the office superstores' success in cyberspace still depends on bringing in those customers.

OFFICE SUPPLY WEB SITES: HOW THEY STACK UP

	Staples	Office Max	Boise Cascade	Supplies Online	CyberSupply
	www.staples.com	*www.officemax.com*	*http://i97.bcop.com*	*www.suppliesonline.com*	*www.cybersupply.com*
CORPORATE INFO	Extensive	Extensive	Extensive	Limited	Limited
SEARCH CAPABILITIES	NA*	Very good	Good	Good	Excellent
USABILITY	Very good	Poor	Good	Very good	Very good
BROWSER REQUIREMENTS	Frames	Secure HTTP, must accept cookies	None	Frames	None
OVERALL GRADE	C	C+	B	A-	A-

*No online catalog

STAPLES

What would you expect on the Web from the second-largest office-supply chain? Electronic commerce? Up-to-the-minute advertising? At least for now, Staples, Inc. in Westboro, Mass., has missed those opportunities.

The Staples site at *www.staples.com* looks good, but it isn't the place to go to buy office products. For that, the site will direct you to the nearest Staples store, using maps generated by MapQuest, Inc.

You can request a free printed catalog, contact customer service or browse through a very complete set of information for job seekers, including the schedule of Staples recruiters on college campuses. But if you hope to buy a ream of paper or a box of staples online, you are out of luck here.

You are also out of luck if you are using Netscape Communication Corp.'s Navigator and want to order a catalog. That

Supplies Online is oriented more toward computer supplies than office supplies

form works only under Microsoft Corp.'s Internet Explorer. With Navigator 3 or 4, it shows up as raw Hypertext Markup Language code. That hardly inspires confidence.

OFFICEMAX

If confidence is lacking on the Staples site, OfficeMax, Inc. — at *www.officemax.com* — comes up short on trust. The No. 3 office superstore is a nice place to visit in person, but online it feels like a fortress.

You can't enter the site without divulging your Zip code. If your corporate firewall blocks cookies, you can't get far into the site at all. And OfficeMax *really* wants you to register before you even start browsing the online catalog.

In fairness, once you have been electronically frisked, you can easily search the OfficeMax catalog and make purchases. The home page lists several sale items, and navigating the site is easy once you are through the gate. There is also corporate information on the Shaker Heights, Ohio, company.

But if attracting customers is OfficeMax's goal, this isn't the way to do it. There *are* ways to build a secure shopping site that aren't so hard on customers.

BOISE CASCADE

The hardest thing about Boise Cascade Office Products Corp.'s site may be finding it. The site's Web address is *i97.bcop.com* — that's pretty obscure for a major paper products company.

But there is nothing obscure, or fortress-like, about the Itasca, Ill.-based company's Web site. The home page welcomes nonregistered visitors, and though you are asked to sign the guest book, you can easily skip past it.

Searching for a particular product is quick, but you had better know what you are looking for — there is no easy way to browse through general product categories. And comparison shopping isn't especially easy here; product listings include only list prices, along with a blurb saying "our customers always pay less."

But Boise Cascade makes it easy to find recycled products, or those from minority- and women-owned businesses. That feature alone can make it worth the trip if your business requires those characteristics in the office products it buys.

SUPPLIES ONLINE AND CYBERSUPPLY

Ironically, the Web sites that offer a look and feel most like bricks-and-mortar office superstores are Internet-only start-ups such as Supplies Online at *www.suppliesonline.com* and CyberSupply, which is at *www.cybersupply.com*.

CyberSupply has exceptionally good facilities for searching or browsing

These sites are bright, colorful and easy to browse. They are stuffed with products, offer overnight delivery and don't ask for any information before you have decided what to buy.

Supplies Online in Dallas is more oriented to computer supplies — the search engine turned up no staples or paper clips.

It includes help on navigating the site and lets you create a personal shopping list and store it on the site.

CyberSupply in North Bergen, N.J., has exceptionally good facilities for searching or browsing, and it stocks regular office products along with computer supplies. It includes prebuilt lists of popular products.

And in convenience and friendliness, both are a large step ahead of the Web sites from the office superstore giants.

If the big boys aren't careful, that stationery-store revolution could happen all over again. □

NEW PRODUCTS

INTERNET SECURITY SYSTEMS, INC. has announced Internet Scanner 5.0, a network security audit tool.

According to the Atlanta company, the tool uses a database of hacker methods and vulnerabilities to detect security holes such as misconfigurations and weak passwords. Graphical reports of network probes include the corrective actions required to achieve maximum security.

It can scan Unix, Windows NT and Windows 95 machines as well as the firewalls, World Wide Web servers, routers and applications.

Scanner 5.0 costs $4,995 for a Class C license.

Internet Security Systems
(770) 395-0150
www.iss.net

ALLAIRE CORP. has announced HomeSite 3.0, a WYSIWYG tool for Hypertext Markup Language World Wide Web site development.

According to the Cambridge, Mass., company, the new version has customizable tool bars, a floating window that displays thumbnails of all images in a directory and a project link-verification feature. The editor can access remote file transfer protocol servers for uploading and downloading files. And it has a Channel Definition Format wizard for use with Microsoft Corp.'s Internet Explorer 4.0 browser.

HomeSite 3.0 costs $79.

Allaire
(617) 761-2000
www.allaire.com

AGAVE SOFTWARE DESIGN, INC. has announced SQml Web 1.0, a World Wide Web-to-database application development tool.

According to the Dallas company, the tool helps integrate database information such as electronic catalogs and price lists with Web sites or corporate intranets. It can generate Hypertext Markup Language documents on the fly with information from existing SQL databases and can automatically update Web sites as the connected databases are updated.

The five-user NT server edition costs $495. The five-user Unix server edition is $995.

Agave Software Design
(972) 424-6662
www.agave.com

Windows NT
Site Server
Exchange
SQL
Proxy
Systems Management
SNA

You are now the master of your own http://universe.

Introducing Microsoft® Site Server. ***It's about a new level of control. For the first time, everything you need to run your sophisticated Intranet or Internet site is in one smart box, from creation to deployment* to maintenance; from electronic commerce** to cross-platform analysis and tracking. The concept is Web site lifecycle management. It means that while the Intranet or Internet may have a life of its own, you're in charge of it. It's orderly, it's logical, it's intelligent, and it's integrated with your Windows NT® Server.***

www.microsoft.com/backoffice/siteserver/info

Where do you want to go today?® **Microsoft®**

*To replicate content with content replication system, you must acquire at least one additional license to install onto a second server. **Feature included in Microsoft Site Server, Enterprise Edition.

©1997 Microsoft Corporation. All rights reserved. Microsoft, BackOffice,Where do you want to go today? and Windows NT are registered trademarks of Microsoft Corporation.

The Enterprise Network

LANs ♦ WANs ♦ Network Management

Briefs

Worldwide Frame-Relay Market

*Projected

Source: Vertical Systems Group, Dedham, Mass.

NetWare automation

Simware, Inc. in Ottawa last week shipped Rexxware 2.0, which provides World Wide Web interfaces to the administration utilities of NetWare 3.x and 4.0 servers.

That lets authorized users access NetWare management functions via any Web browser, allowing them to manage remote servers from any location or desktop. Rexxware costs $395 per server. Discounts are available when users purchase more than 10 servers.

New domain

Portasoft Corp. in San Jose, Calif., last week released DNS Pro 5.0, a domain name server (DNS) software package that lets Microsoft Corp. Windows NT and Digital Equipment Corp. Alpha users find specific Web sites by name. DNS Pro 5.0 includes an advanced graphical user interface that makes it easier to install and configure domain name server. DNS Pro also has a statistical interface tracking applet to monitor and report usage and traffic. It is available now for $495.

WinCE wireless

Netwave Technologies, Inc. in Pleasanton, Calif., recently released drivers to support Microsoft Corp.'s Windows CE 2.0 operating systems for its AirSurfer Plus Wireless LAN PC Cards. Netwave's AirSurfer Plus Wireless LAN gives users mobility and seamless roaming on a wireless network.

Novell tool bridges services gap

By Laura DiDio

SECURE, FAST and nearly 100% guaranteed Internet access.

That's the enthusiastic description of some early users of Novell, Inc.'s new BorderManager suite of directory-based Internet/intranet services.

BorderManager is one of a new class of software packages designed to bridge the chasm between a business's corporate intranet and the Internet.

Like Microsoft Corp.'s Proxy Server and Netscape Communications Corp.'s Navigator, Novell's BorderManager sits at the "border" of a company's intranet and Internet.

There, it acts as a secure centralized gateway that accelerates World Wide Web access for multiple users.

Instead of requiring separate connections to a particular Web site each time individual users request it, the Microsoft and Novell offerings use their respective proxy engines to cache the most frequently accessed sites.

The result is savings in time, money and precious bandwidth.

"BorderManager is a kick-butt product that gives us fast, secure Internet access. It lets me customize user access to the

Novell, page 52

BORDER PATROL

Benefits of BorderManager

- Access to Internet
- Remote access to corporate intranets
- Centralized management of security on intranets and extranets
- Links geographically dispersed sites
- Reduced costs from using the Internet for voice, data, fax and multimedia transmissions
- Lower hardware costs for Web servers

3Com, Tivoli link management tools

By Patrick Dryden

3COM CORP. and Tivoli Systems, Inc. last week announced plans to pool their skills in managing networks and assuring prompt delivery of critical business data.

Early next year, 3Com will bundle the agent software for the Tivoli Management Environment (TME 10) enterprise manager with the nearly 2 million network interface cards it ships each month. By mid-1998, 3Com will offer a remote software update tool based on Tivoli's software.

Those steps can eliminate some costly trips by support technicians to networked PCs to install management agents and upgrade drivers, users said.

"It's extremely important to have management agents bundled at the card level," said Paul Edmunds, a senior network analyst at Duke Energy Co. in Charlotte, N.C. Embedding software in the card can free some PC resources, he said. And deploying TME 10 to servers and

3Com, page 52

TELECOM SERVICES

Long distance makes business user fonder

By Matt Hamblen

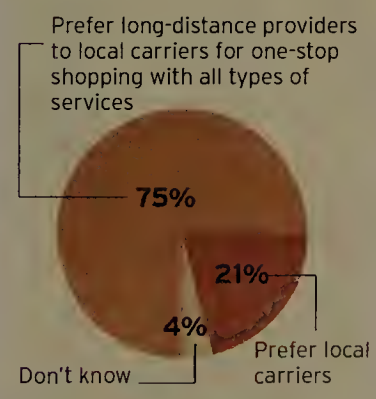
DO BUSINESS USERS like their local telephone and data carriers? It depends.

In interviews with *Computerworld,* network managers criticized their local carriers and were quick to describe service and reliability problems. They want an alternative. But local carriers claim that customers are generally pleased with their service. They cite their own customer surveys to back up their claims — without revealing per-

Long-distance, page 54

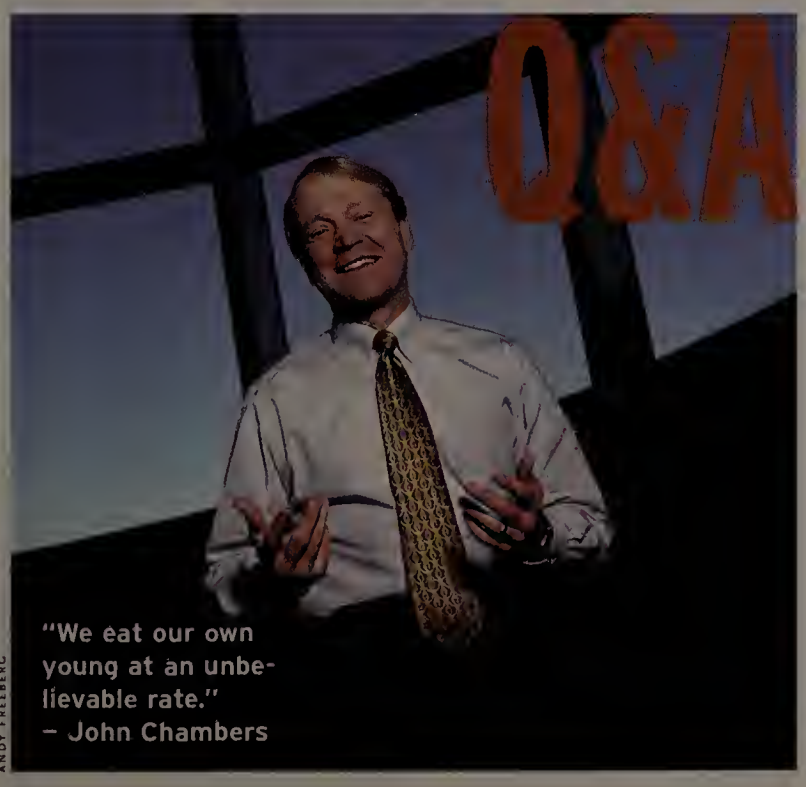
GOING THE DISTANCE

Which do you prefer: long-distance or local providers?



Base: 540 large business users

Source: Deloitte & Touche Consulting Group, Washington



ANDY FREEBERG

Cisco CEO: John Chambers

Worry-free is not the way to characterize John Chambers, president and CEO of Cisco Systems, Inc., the largest internetworking vendor, with a market cap of $57 billion. He says paranoia about the competition and the challenge of keeping up with users whose needs are rapidly changing keep him up at night. But he doesn't lose sleep figuring out which emerging technology to support. He prefers to use his $800 million research and development budget to support all options and let the customer decide which is best.

Chambers recently shared his views of the industry and discussed challenges facing the San Jose, Calif., networking giant with Computerworld *Senior Editor Bob Wallace and Executive Editor Maryfran Johnson.*

CW: What's the most important emerging trend you see?

CHAMBERS: The most important trend is that data, voice and video are coming together. We

Cisco CEO, page 52

Novell tool spans service gap

CONTINUED FROM PAGE 51

Web based on individual user IDs," said Phil Easter, a technology strategist at Greyhound Lines, Inc. in Dallas.

Although Microsoft's Proxy Server has been shipping for a year, users at four commercial and two academic accounts said the Novell product gives them more features. Those include faster throughput and easier, centralized management capabilities.

But the extra features do cost more: BorderManager (with a two-user IntranetWare license) is $2,495 for five clients, compared with a price of $1,000 for Microsoft's Proxy Server (not including Windows NT 4.0).

NOT ENOUGH

"Proxy Server is a good product, but it wasn't an option for us," said Joe Meadors, information technology manager at the Metropolitan School District of Pike Township in Indianapolis, which supports 9,000 users. "The integration with [Novell Directory Services (NDS)] allowed us to get all four BorderManager servers up and running in four hours, which is awesome. It has more integrated services than competing products," Meadors said.

Users also said BorderManager lets them leverage their existing investment in Internet access gear and saves their businesses thousands of dollars per month on recurring leased-line costs.

Analyst Bob Sakakeeny at Aberdeen Group, Inc. in Boston said BorderManager is just the type of product Novell needs. "Novell must jump-start momentum in the face of Windows NT's continued assault. BorderManager, with its integrated suite of services and close ties to NDS, could be a big step in that direction," Sakakeeny said.

Maritime's Monty Sharma is a fan of the Novell product

"It's allowed us to keep our original T1 line, which we were planning to replace with a fatter 10M bit/sec. link," Meadors said. "And the Proxy Cache feature cuts down on bandwidth usage, saving us $2,000 per month on our existing T1 costs."

Monty Sharma, a solutions designer at Maritime Telephone & Trust Co. in Halifax, Nova Scotia, is another fan of the Novell product.

He said BorderManager provides his shop with an integrated way to protect corporate information and resources while providing Internet access.

"This is exactly the type of functionality we need for Internet access," Sharma said. □

3Com/Tivoli management

CONTINUED FROM PAGE 51

later to desktops would be easier, he said.

The vendors plan to blend 3Com's network management tools with Tivoli's application management capabilities so users can set policies to govern the performance of quirky client/server networks.

PAT DRYDEN

Duke Energy's Paul Edmunds: Embedding the software in the card can free PC resources

"Current tools can just report on service levels at best. The difficult goal is to actually manage delivery," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

Network vendors such as Cabletron Systems, Inc., Cisco Systems, Inc. and Newbridge Networks Corp. in Kanata, Ontario, are pursuing such policy-based management of data delivery.

Competitors Computer Associates International, Inc. and Hewlett-Packard Co. also seek ways to control, not just monitor, quality of service.

But McConnell said he sees a good chance of success from these partners, because of 3Com's leadership in network adapter cards and distributed control of network plumbing and Tivoli's control of systems and application services.

Even so, 3Com and Tivoli aren't the only players users need for support.

Each one should pursue the same course with other vendors, Edmunds said. For example, he would expect card vendors such as Intel Corp. to also bundle Tivoli agents.

One branch of Lockheed Martin Corp. has standardized on cards and other gear from 3Com for its 16,000-user network, and managers there need to guarantee quality of service for videoconferencing and multimedia training applications.

"But we're not a univendor shop. We have enough non-3Com equipment that this would be difficult," said Bob Napier, a network engineer at the site in Oakridge, Tenn. "We need a standard way to provide the same policy-based management to all devices."

Officials at 3Com in Santa Clara, Calif., and Tivoli in Austin, Texas, focused on their partnership but admitted they will forge similar collaboration efforts with other vendors.

3Com is a charter member of Tivoli's Open Network Environment program to integrate technologies in the areas of traffic prioritization and network performance management. □

3COM AND TIVOLI'S MANAGEMENT PLAN

Early 1998
- 3Com distributes Tivoli agent with its network adapters
- PCs and servers can be managed from TME 10 framework

Mid-1998
- 3Com ships remote-update tool for its network adapters
- 3Com users can distribute new drivers and software

Late 1998
- 3Com and Tivoli manage network delivery
- Networks built on 3Com adapters and internetworking gear can prioritize traffic flow according to policies set for each application

Cisco CEO discusses challenges

CONTINUED FROM PAGE 51

first started hearing this about a year to 15 months ago from a reasonable number of customers. The other day, I gave a speech before 105 customers and asked them how many expect to have data, voice and video over the same network in the next three years. Ninety percent raised their hands. I was shocked.

CW: Cisco's maintained a furious pace of mergers and acquisitions for several years. Will that continue?

CHAMBERS: Of the markets we're in today, we're only able to address half the areas we'd like to address. The market that is relatively huge and new is voice/data and video integration. Our last three acquisitions have been in this area. And of the 10 to 15 we'll do in the next year, you'll probably see a third to a half in that area.

CW: You've been quoted as saying that half of all mergers and acquisitions fail. What has Cisco's experience been?

CHAMBERS: Being very candid, knowing how difficult acquisitions were, we might not have done the first one. In excess of 75% to 80% worked out at or above our expectations. Our hit rates were very good. But if you really want to know how one is really working, look at how many people are left. The voluntary attrition rate for the 19 companies we've acquired has been 6%.

CW: On the technology front, where does Ethernet switching stand?

CHAMBERS: Many customers wait until a physical move takes place before implementing switching. Almost all customers going out to buy new products to put in today go straight to switching because the price of switches compared with hubs is getting so tight, you'd be foolish not to.

CW: What is your greatest fear about Cisco and its future?

CHAMBERS: It's easy. It's keeping up with customer expectations, because they're increasing so rapidly. My second one is staying close to the customer. We get almost all of our ideas for products, features, acquisitions and trends in the industry from customers.

It was Motorola that told us about SNA-TCP/IP integration and helped us work through that. Ford and Boeing pointed us to [Fast] Ethernet. Boeing went further than that and told us what company to buy [Crescendo Communications Corp.]

CW: What does Cisco have to specifically avoid for continued success?

CHAMBERS: What really [angers me] is when a Cisco employee is arrogant to a customer and says `I know better than you what you need.' That's what can really get us into trouble. At Wang and IBM, we did the same thing. At the beginning, neither company did.

We have no religion when it comes to technology. We want to be No. 1 or 2 or not compete.

We eat our own young at an unbelievable pace.

That's something most cultures don't do. If we either see the trend changing faster than before or see a new trend coming on, we jump on the bandwagon regardless of implication on current products.

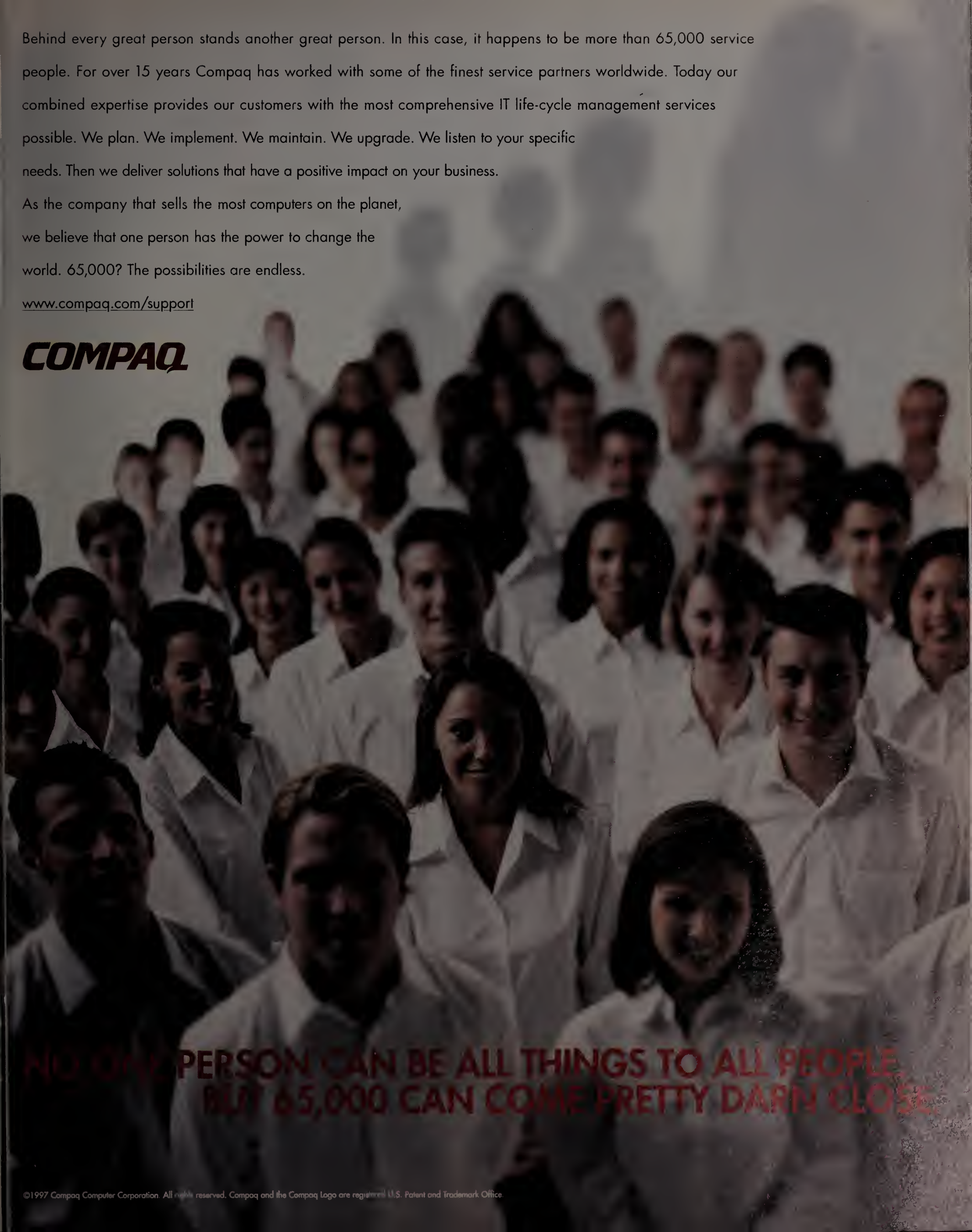
I acquired [ATM switch vendor] Lightstream for $120 million. It was a good product with very talented engineers. They had a good next-generation product on the drawing boards. But all of a sudden, our customers said, `John, you don't understand. We're going to make decisions over the next year or two for vendors who have the products available now. If you don't have it, you can't participate.' So we scrapped the switch and bought Stratacom. □

Behind every great person stands another great person. In this case, it happens to be more than 65,000 service people. For over 15 years Compaq has worked with some of the finest service partners worldwide. Today our combined expertise provides our customers with the most comprehensive IT life-cycle management services possible. We plan. We implement. We maintain. We upgrade. We listen to your specific needs. Then we deliver solutions that have a positive impact on your business.

As the company that sells the most computers on the planet, we believe that one person has the power to change the world. 65,000? The possibilities are endless.

www.compaq.com/support

COMPAQ



©1997 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq Logo are registered U.S. Patent and Trademark Office.

Long-distance carriers rate higher

CONTINUED FROM PAGE 51

centages.

Surveys in recent years show local carriers rate higher with business customers than companies in the wireless or cable categories, but not as well as the big long-distance companies.

Consumers, however, tend to rate their local carriers higher, surveys show.

Analysts expect users' perceptions of their current providers to shape the development of the $100 billion local carrier market following deregulation. The market is now dominated by six companies, but as soon as state and federal regulators grant them the OK, all six will scramble to sell long-distance data and voice services and Internet access.

But long-distance carriers also have begun to compete in the local market. "I'd rather have another local provider . . . but where we are, that's the only one" said Tony Dattola, a network engineer at Perot Systems, Inc. in Plano, Texas. Perot uses GTE Corp. in Stamford, Conn., as its local provider.

"They're not responsive when you have problems, and they have lots of unexplained busy signals," Dattola said. "In my opinion, their [network] is undersized for the area we're in. They won't come and tell you about problems, or they'd have to pay penalties."

GTE officials said they were sensitive to Dattola's concerns and are seeking to exceed his company's expectations.

But generally, GTE internal surveys of business customers show that GTE is just as competent as regional Bell operating companies and long-distance companies.

NOT PREFERRED

Another indicator of customer dismay with local carriers comes from Ken McGee, an analyst at Gartner Group, Inc. in Stamford, Conn.

He recently asked a crowd of several hundred business telecommunications managers at an Orlando, Fla., conference if any favored using their company's local provider as their long-distance provider. None raised their hands.

"I've been doing that same survey for 10 years, and the results are always the same," McGee said later in an interview. "There's a groundswell to fire the local carrier. It's a product of a number of years of being held captive — and pent-up resentment."

William Lazarus, the telecommunications manager at Horizon/CMS Healthcare Corp. in Albuquerque, N.M., said after years of experience in telecommunications, he hasn't met a manager who likes his or her local provider.

The perception of distrust of local carriers by business users is widespread but is somewhat unfair, said Rosemary M. Cochran, an analyst at Vertical Systems Group in Dedham, Mass. "The local carrier is the last link [in a voice or data connection], and it's naturally going to be blamed for whatever the problem is," she said.

Analysts, carriers and users agreed that most business customers want to simplify their purchases of telecommunications equipment and services.

And that means carriers will put on the full-court press in marketing their guarantees, prices and attributes to network managers.

Cochran warned network managers that as local carriers focus more on providing long-distance and other services, they could end up reducing services to favored, large customers such as banks that operate in a specific region.

"If you're the top dog in a region, you'll get the attention of a local carrier," Cochran said.

"But when the local companies focus attention nationally, all of sudden, you're not so big. As deregulation catches on, the local carriers might end up spreading resources more thinly," he said. □

If you've scaled the heights of custom application development, now's the time to prove it. Enter your innovative Microsoft® Windows® solution in the seventh annual Windows World Open today. It's the international competition that recognizes the best in Windows development. And isn't reaching the top what your journey is all about?

Submit your entry by January 23, 1998, and receive the recognition you deserve.

www.wwopen.com
Visit the contest Web site to download an entry kit, meet last year's winners and get details about this year's categories. E-mail wwo@jcai.com or call 800-829-4143.

Windows World Open
RECOGNIZING EXCELLENCE IN CUSTOM APPLICATIONS

FOUNDING SPONSORS
Microsoft COMPUTERWORLD SOFTBANK COMDEX

WE HAVE

MET

THE

ENEMY

AND WE ARE FULLY

COMPATIBLE

©1997 SYBASE, INC. ALL RIGHTS RESERVED. ALL TRADEMARKS ARE PROPERTY OF THEIR RESPECTIVE OWNERS.

In the rough and tumble world of information technology, Sybase proudly introduces a way to help us all live together in peace. It's called Adaptive Component Architecture™. And it is truly a different kind of animal. ▶ With Adaptive Component Architecture, open components access data from any DBMS, using standard component models. Meaning you're no longer locked into a single vendor. ▶ Even our application development tools are open. Which means that they interoperate with all of your existing systems to help you create new Customer-Centric Computing applications no matter whose technology you use. Adaptive Component Architecture is a complete, integrated, end-to-end architecture that includes everything from high performance data and transaction servers to leading edge middleware and enterprise development tools. ▶ If you're ready to reap the benefits of life in a compatible world, contact your friends at Sybase and ask for our Adaptive Component Architecture white paper. Visit us at www.sybase.com/success. You'll see how companies are using our technology to fundamentally improve the way they do business. Or call 1-800-8-SYBASE (ref. ACCW2).

INTRODUCING ADAPTIVE COMPONENT ARCHITECTURE

SYBASE®

THE FUTURE IS WIDE OPEN™

WITH DISTRIBUTED APPLICATIONS, A PROBLEM IS ONLY A PROBLEM IF YOU DON'T SEE IT COMING.

Nobody likes to be blindsided by o problem. Thot's why we created Candle Commond Center, o solution which gives you the power to detect ond control problems ond monoge your SAP R/3, Lotus Notes, and internolly developed applicotions — all from a single monogement point.

Whether your applicotions run on ORACLE, Microsoft SQL Server, Sybase, Informix, DB2, IMS, or CICS — whether they run on Windows NT, UNIX, OS/400, or MVS ond their associoted networks — Condle Commond Center hos the scope, scole, ond power to keep you in control.

Condle brings you the power to oddress the mission impossible problem of end-user opplicotion response time ond the power to manage new technologies such os MQSeries.

To see how we con help you stoy in control, just coll us toll-free ot 1-888-322-9988 or visit our Web site ot www.condle.com. And begin thinking oheod today.

!Candle

Software

Databases • Development • Operating Systems

Briefs

Average 1996 application development costs

Company size	Cost
Large (more than $500M annual revenue)	$2.3M per application
Midsize ($200M to $500M annual revenue)	$1.3M per application
Small (less than $200M annual revenue)	$434,000 per application

Base: 200,000 application development project

Source: The Standish Group International, Inc., Dennis, Mass.

Antivirus patents

Four IBM researchers received a patent for using neural network technology to hunt for computer viruses. The technique uses a form of artificial intelligence that attempts to simulate the way a human might look at the behavior of computer code and identify viruses. The neural networks are being used in IBM AntiVirus software.

PKZip debuts

Ascent Solutions, Inc. in Miamisburg, Ohio, released PKZip for MVS 2.2 Plus, compression software for mainframe files. It includes a hyperzip feature that can swap between 31- and 24-bit addressing to optimize storage during I/O requests. It also supports magnetic tape handlers so users can compress files directly to tape storage. Prices range from $15,000 to $27,000. Upgrades from PKZip for MVS 2.17 range from $3,075 to $5,400.

Intelligent mainframes

Burlington, Mass.-based Intelligent Environments announced Amazon 3270 Server The package supports more than 500 simultaneous mainframe 3270 connections over the World Wide Web without requiring users to modify mainframe applications. Amazon 3270 Server runs on Windows NT and costs $4,995 for 50 concurrent sessions.

Flavored Java still wins users

▸ *Users say they like Java with or without cross-platform functions*

By Sharon Gaudin

SOME USERS are nervous about Sun Microsystems, Inc. and IBM working on Java native code compilers. But Java is gaining a following of developers who place it above the industry's powerhouse languages for building platform-specific applications.

Two of Java's biggest promoters, Sun and IBM, are working on native code compilers designed to light a fire under Java's often-maligned performance [CW, Oct. 27]. But using the compilers would mean killing the language's cross-platform capabilities, the very thing that attracted an estimated 750,000 application developers in the past 18 months.

Several developers, however, said they would continue to use the fledgling language — often attacked for its sluggishness and immaturity — even if forced to write applications that worked on only one platform.

"Our productivity is so much better for our programmers when they're using Java," said Thomas Taylor, chief technology officer at Workfire, Inc., an Internet software company in Bellevue, Wash. "For a large-scale enterprise program, Java is very much superior. If you're going to the moon, you're not going to try to get there by climbing a tree. That's what it would be like with C++."

Colonial Savings' Frank Manci: "Sun's doing a lot to [Java]"

Normally, Java applets and applications can run on many different platforms and World Wide Web browsers because they are compiled into byte code and executed by a virtual machine. A Java native code compiler turns Java code into machine code, enabling it to run applications faster but

Java, page 60

Workflow software aids app development

By Barb Cole-Gomolski

WORKFLOW SOFTWARE, typically used to speed the processing of business forms, may help companies get a handle on unruly software development projects.

Workflow systems have a few characteristics that come in handy when managing groups of programmers, users said.

They assign roles to workers, which helps project managers enforce corporate policies on who can authorize system

Workflow, page 60

ROOM FOR IMPROVEMENT

Software development project statistics

40%	canceled before completion
33%	overbudget or late
27%	successful

Base: 360 IS professionals

Source: The Standish Group International, Inc., Dennis, Mass.

MACINTOSH MARKET

Users wait for cross-platform Office 98

By Gordon Mah Ung

LAN MANAGER Steven McCaffrey has a classic cross-platform dilemma.

With more than 250 Macintoshes to support, he can't move his Windows 95 users to Office 97 until the PC and Macintosh systems can exchange files easily.

"We don't plan to implement [Office 97 or 98] until it's available on both platforms," said McCaffrey, who works at Boeing Aerospace, Inc. in Houston. "If it doesn't work on both, it's not worth investing in."

That's a problem Microsoft Corp. said it recognizes and hopes to address when it releases Office 98, Macintosh Edition, this winter.

Microsoft, with an estimated $1 billion in Macintosh software sales, has a considerable stake in the Apple Computer, Inc. user community. In August, Microsoft invested $150 million to shore up the financially troubled Cupertino, Calif.-based computer maker.

Office 98 for Macintosh promises to be completely cross-platform with previous Macintosh Office file formats

Cross-platform, page 60

OVERALL A GRADE

REVIEW▸ *File-Ex, Version 2.10A*

COTTONWOOD SOFTWARE
Leawood, Kan.
www.cottonwoodsw.com

Pro: Intuitive, helpful

Con: Customization dialog could be easier

OVERALL B+ GRADE

REVIEW▸ *Keyboard Express, Version 2.0*

INSIGHT SOFTWARE SOLUTIONS
Bountiful, Utah
www.wintools.com

Pro: Excellent time-saver, easy to use

Con: Needs "wait for" command

REVIEW▸ *PC utilities*

Software reduces grunt work for Windows users

By Howard Millman

EVEN THE BEST of software usually has room for improvement — especially simple, affordable enhancements that can minimize drudgery.

FILE-EX

In the top tier of avoidable drudgery is the need to change the file and directory listings in Windows' Save and Open dialog boxes. That's because these two standard dialog boxes always return to a default directory, usually the same directory the application resides in. Naturally, you don't store every one of your documents and files in that one directory; you must always change to the directory you want.

Cottonwood Software's File-Ex ($29.95) elegantly eliminates that exercise. This first-rate, yet unassuming, utility enhances the Open and Save dialog boxes of every application that doesn't offer its own customized dialog boxes (such as Microsoft Corp.'s Word and Corel Corp.'s WordPerfect).

Version 2.1 is available now and works with Windows 95 and Windows 3.1 (gaining the benefit of long file names). A Windows NT version will ship early next year.

File-Ex, page 61

SUN DEC

(You'd be surprised at all the connections you

If, by chance, you're not surprised at how open IBM Serial Storage Systems manage to be, then their remarkable performance will raise an eyebrow or two.

First, these open disk systems are designed to connect to UNIX® servers, including HP, Sun and DEC. And NT servers, like HP and Compaq. Not to mention IBM systems, too.

Then there's the added advantage of speed. A Serial Storage Architecture, which is an ANSI standard interface, is used with a two-way loop to handle inbound and outbound data streams simultaneously.

This helps make our Serial Storage

IBM and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/OPEN Company Limited. Other company, product and service names may be trademarks or service marks of others. © 1997 IBM Corp.

,HP, ,NT, ,N.I.,

can make with IBM Serial Storage Systems.)

Systems significantly faster than traditional SCSI disk systems.

As a result, more of your users have faster access to valuable data. For applications like data mining, data warehousing and transaction processing.

And the future? As your storage needs inevitably grow, you can easily increase capacity. Without taking your business systems offline.

Visit www.ibm.com/storage/connections to learn more surprising ways you can maximize access to stored data.

Solutions for a small planet™ IBM®

Sun, IBM plan Java compilers

CONTINUED FROM PAGE 57

only on a particular target platform, such as 32-bit Windows or Sun's Solaris version of Unix.

Sun and IBM are working on compilers for various platforms. An IBM spokesman said the company doesn't want to defeat Java's platform independence but wants to give developers a chance to optimize the application's performance.

SuperCede, Inc., an application development toolmaker, has built a Java development environment that gives developers the choice of having their Java applications compiled into byte code or machine code.

JAVA SUPPORTER

Ted Schadler, a software analyst at Forrester Research, Inc. in Cambridge, Mass., said Java is starting to come into its own as an important development language. He said Java is a good language because it has garbage collection and automatic code generating.

"These are things that language purists dream of for good reason. We're at the tip of the iceberg in the real benefit to developers with Java," Schadler said.

Frank Manci, a network technical manager at Colonial Savings FA in Fort Worth, Texas, said he is worried that Sun and IBM will devote less development time and money to improving Java's cross-platform performance. And although he is focused on platform independence, Manci said Java is a good language, even for platform-specific applications.

"It was an immature language, but it was really new, and that's the way it goes," Manci said. "But it's coming along. Sun's doing a lot to it, and it's a decent language now."

GAINING MATURITY

Link Alander, coordinator of division research and systems at Western Illinois University in Macomb, said Java has matured just fine.

"We've been watching it for awhile," Alander said. "Cross-platform issues are being completely erased. Java has matured enough for us that we're looking at retraining and retooling." □

Workflow software aids app development

CONTINUED FROM PAGE 57

changes. Workflow applications also divide complex processes into manageable tasks that can be handed out and tracked by a project manager.

Applying workflow principles to software development could help information systems managers deliver more projects on time and within budget.

According to The Standish Group International, Inc., a research firm in Dennis, Mass., 40% of software development projects are canceled before completion, and 33% are late or over budget. Only one-third of projects are successful, according to Standish's survey of 360 IS professionals.

Mike Logan, program engineer at AlliedSignal, Inc. in Redmond, Wash., said the workflow underpinnings in the StarTeam software process management system from Irvine, Calif.-based StarBase Corp. provide a model on which the company can base its development projects. For example, Logan is building software programs to guide the navigational devices AlliedSignal makes.

PROJECT STRUCTURE

"In the past, [software development] was pretty loose," Logan said. Now, project requirements and documentation are tracked in the system. StarTeam's collaboration features, such as threaded discussions and links to electronic mail, also allow developers to stay in close communication about a project.

At Eaton Corp. in Milwaukee, StarTeam's threaded discussions mean that "if I have a question about a piece of code, I can launch a conversation about it," said Steve Aninye, principal software engineer at the machine control giant.

Eaton uses Lotus Notes, but the company benefits from StarTeam's collaboration features because they are so tightly integrated with the software development system. Eaton also gives select customers access to those discussions and makes changes based on their input, Aninye said.

Lexis-Nexis in Dayton, Ohio, reduced the time it takes to provide a software development project plan from three weeks to one, according to a senior project manager at the online publisher. It did so by exploiting some of the workflow features of the Process Engineer software development system from Learmonth & Burchett Management Systems in Houston.

Specifically, Lexis-Nexis has benefited from the best-practices library that defines roles and responsibilities for developers. □

Users wait for cross-platform Office 98

CONTINUED FROM PAGE 57

and with Office 97 for Windows 95. It will offer most of the features of the Windows version and will be able to replace shared files that were deleted. IS managers will be able to configure Office before deploying copies of the suite to desktops. Microsoft also hopes to address user criticism that Office looked and felt too much like a Windows application. Users had complained about the shape of Office dialog boxes and even the non-Macintosh colors.

One thing the suite won't offer is a Microsoft database application, which some users said was a flaw. "I wish they would have Access. It is a shortcoming," said Darrell Debowey, graphics technical director at the Cleveland Clinic Foundation, a medical center in Cleveland. Debowey said Macintosh users now access the Microsoft database using emulation software that is clumsy and slow.

McCaffrey echoed Debowey's hopes for Access on the Macintosh or at least better tools through Microsoft Excel to reach his company's Oracle database. Matthew Price, a group product manager for Office, said Microsoft won't offer Access until there is a clear market for it. The Office suite for Macintosh will be integrated with Visual Basic for Applications, a popular Windows-based application development tool. □

NEW PRODUCTS

SEAGATE TECHNOLOGY, INC. has announced WinInstall 6.0, a software distribution utility for client/server systems.

According to the Scotts Valley, Calif., company, the new version supports distribution via the Internet through ActiveX control and browser plug-ins included with the software. Workstation cloning capability and Simple Mail Transfer Protocol electronic-mail notification of status are included. Installers that reside on the client have been rewritten in C++.

WinInstall6.0 costs $15.90 per node.

Seagate Technology
(408) 438-6550
www.seagatesoftware.com

MIJENIX CORP. has announced FreeSpace, a utility for Windows 95 and NT that increases hard drive space by selectively compressing files.

According to the Madison, Wis., company, the utility allows users to compress programs, graphic files or documents from the file manager. Analytic tools graphically display space usage and help users select files for compression. Files automatically decompress when attached to electronic mail. A "file type" feature compresses all files of a certain type (for example, "BMP" files).

FreeSpace costs $49.95

Mijenix
(608) 277-1981
www.mijenix.com

NETWORK INTEGRITY, INC. has announced Real-Time Replicator for NT, software for Windows NT servers.

According to the Marlboro, Mass., company, the software was designed to copy data from NT production servers to target servers. That lets users conduct tape backup on target servers while keeping production servers online and accessible 24 hours per day. Real-Time Replicator's minimal bandwidth approach replicates only data that has changed either at the byte level or the file level.

It costs $2,999 per server.

Network Integrity
(508) 460-6670
www.netint.com

SMART STORAGE, INC. has announced SmartCD, software that lets network users share a CD recorder in a Windows 95 workgroup environment.

According to the Andover, Mass., company, the software uses a variable packet writing approach that lets users save data to a CD just like they would to a floppy disk or hard drive. No CD premastering is needed.

One or many users can copy files to a CD — as well as open, edit, rename and delete — while keeping an audit trail because CD is a permanent storage medium.

SmartCD costs $425.

Smart Storage
(508) 623-3300
www.smartstorage.com

SYMANTEC CORP. has announced PCAnywhere32 8.0, remote communication software for 32-bit Windows environments, including Windows NT 4.0 from Microsoft Corp.

According to the Cupertino, Calif., company, Version 8.0 has caller security that is integrated in the NT User Manager so users only have to remember their standard network password.

The software also includes integration with free desktop video-chat software from White Pine Software, Inc., so users can switch from a live remote control session to a face-to-face videoconference using the PCAnywhere tool bar.

A two-computer license costs $149.

Symantec
(541) 334-6054
www.symantec.com

IBM has announced ViaVoice, a continuous dictation software that lets users talk to their computers in a normal spoken voice.

According to the Armonk, N.Y., company, the application enables users to dictate directly into Microsoft Corp.'s Word at a rate of 140 words per minute. The total vocabulary can be up to 64,000 words.

ViaVoice costs $99.

IBM
(914) 765-1900
www.ibm.com

REVIEW▶ *PC utilities*

Software reduces grunt work for Windows users

CONTINUED FROM PAGE 57

File-Ex installs effortlessly, immediately supercharges Windows' puny Open/Save dialog boxes and is absolutely transparent in use. Online help files provide most of the information needed to manage the application. Free support from Cottonwood, via telephone or electronic mail, fills in any blanks.

With the latest version, dialog boxes now list more files and directories, so you scroll less. New buttons (including delete, rename, move, copy and find) let you manage files and directories without opening another window or resorting to summoning Windows 95's Explorer or Windows 3.1's File Manager. You can already do some file management with a right-click shortcut in Windows 95, but File-Ex makes it much more obvious, especially for the novice user.

The one improvement I'd like to see is the inclusion of more preconfigured applications. File-Ex ships configured just for selected versions of Word.

KEYBOARD EXPRESS

Keyboard macros offer another way to avoid repetitive work. But in some applications, creating a macro demands more time than it saves.

Insight Software Solutions, Inc.'s Keyboard Express ($24.95) lets you add hot key-activated macros to multiple applications. It's fast, simple and reliable. It caused no problems or conflicts running in a fully loaded Windows 95 machine.

Building a macro takes as little as a few seconds. You load Keyboard Express by executing it manually or, as I do, by placing it in the Start menu so it loads automatically. To create or execute a macro, you summon the configuration dialog by combining the Control key with a right mouse button click. Next, click on the oversize "Add Hot Key" button at the top of the application window.

Keyboard Express lets you build your macros using a combination of special-function and control keys (such as Alt, Page-down, F1 through F12, Arrow and Space). Other special-purpose keys create a delay (measured in seconds), post a message in a predefined area of the screen or call a program. You can nest macros, repeat events and add sound support. For example, you can play a .wav file in conjunction with an alarm.

When it comes to programming, no matter how simple it is, I try to make it even easier. So instead of building a macro, I opted for the Capture Keystrokes option.

Once assigned to a hot key, Keyboard Express' macros automatically enter repetitive text or execute a series of tasks in any application. Use the hot key macros globally in any word processor, spreadsheet or E-mail application or confine the macros so they execute only when a specific window is open.

A comprehensive online help system clearly anticipates common requests. After that, it's a matter of experimentation.

As an aside, when I ordered Keyboard Express, Insight Software generously sent me a shareware copy of a Windows Clipboard enhancer, SmartBoard. I advise caution before using this utility. SmartBoard caused intermittent lockups and other behavior problems. □

Millman operates the Data System Services Group, a vendor-independent consultancy in Croton, N.Y. Reach him at 914-271-6883 or hmillman@ibm.net.

IT'S NOT HOW MUCH YOU READ.

You can read a knee-high stack of computer magazines each month and still not find the depth and breadth of news and information you'll discover each week in the pages of *Computerworld.*

As the only weekly newspaper for IS professionals, *Computerworld* is filled with up-to-the-minute articles on topics ranging from products and people to trends and technology. We cover it all — PC's, workstations, mainframes, client/server computing, networking, communications, open systems, World Wide Web, intranets, and more.

It's everything you need to know to get an edge on the competition.

That's why over 152,000 IS professionals pay to subscribe to *Computerworld.* Shouldn't you?

IT'S WHAT YOU READ.

Order *Computerworld* and you'll receive 51 information-packed issues. Plus, you'll receive our special bonus publication, *The Premier 100,* an annual profile of the leading companies using information systems technology.

Call us toll-free at **1-800-343-6474**, or visit us on the World Wide Web at http://www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue. And get your own copy of *Computerworld.*

Then you can spend less time reading about the world of information systems. And more time conquering it.

COMPUTERWORLD

The Newsweekly for Information Technology Leaders

a ▶

◀ b

data networking will never be as easy, as dependable or as reliable as voice networking.

Fold page so point a meets point b.

See how Inter.NetWorking℠ from Lucent Technologies is changing the face of networking. For more complete demonstration, contact a Lucent Account Executive. (He/She will bring you into the fold.)

We make the things that make communications work.™

a ▶

◀ b

Servers & PCs

Large Systems • Workstations • Portable Computing

Briefs

Disk disaster relief

Highpoint Technologies in Austin, Texas, has announced software that can recover data from damaged disk drives without requiring users to completely reformat the disk. DataBack targets Windows 95 and Windows NT PCs and PC servers. The software moves data off the damaged disk for retrieval before reformatting the damaged disk, which usually wipes out all the data the user is trying to recover. DataBack costs $99.

CHRISTOPHER BALDWIN

Syquest aimed at Jaz

Syquest Technology, Inc. in Fremont, Calif., this week will announce the SparQ, a 1G-byte removable cartridge disk drive. The unit is positioned to compete with Roy, Utah-based Iomega Corp.'s 1G-byte Jaz drive. The SparQ drive costs $199, and a three-pack of SparQ cartridges is $99.

Pentium prices cut

Intel Corp. last week announced price cuts ranging from 13% to 40% on its Pentium and Pentium II processors. The Pentium II runs at 266 MHz and costs $530, down 21% from the previous price of $669. The price of the 233-MHz chip dropped 24%, from $530 to $401, an Intel spokesman said. A 300-MHz Pentium II processor was reduced 13%, from $851 to $738. A spokesman said Intel made the price cuts based on market demand, production yield and the life cycle of a specific processor. The price of the new 120-MHz MMX chip for mobile devices fell 12% to $106, and the desktop version of the 166-MHz Pentium with MMX fell 23% to $112.

AlliedSignal juggles data

▸ Software tools help ease storage shuffle

By Tim Ouellette

ALTHOUGH ITS mainframes and servers were finally in the same place, the moving had only just begun for AlliedSignal, Inc.

Now, instead of moving physical systems and servers into one location, AlliedSignal had its hands full with huge chunks of corporate data that had to be juggled around to provide reliable service levels and to keep a lid on costs, said Jess Fawns, systems project manager at AlliedSignal's Tempe, Ariz., operations center.

DOWNTIME DOWNERS

Major causes of planned downtime

Scheduled backups	53%
Data transfer between disk subsystems	34%
Migrating data among data centers	27%
Data warehouse loading	22%
Year 2000 testing	18%

Base: 700 IS managers; multiple responses allowed

Source: Find/SVP, New York

As more companies like AlliedSignal centralize their data center operations, they are finding reasons to shuffle that data among different disk subsystems to gain efficiencies.

For example, users are migrating data from older disk arrays to newer, more powerful systems, off-loading data to different disk arrays for year 2000 testing, isolating some departmental data on certain disk systems and creating mirrored copies of critical data in case of disaster.

AlliedSignal turned to Amdahl Corp.'s Transparent Data Migration Facility (TDMF) to help populate 2T bytes of the latest mainframe disk arrays from EMC Corp. and IBM and then use the older arrays to host 2T bytes of year 2000 test data.

Previously, this would have meant taking key applications,

AlliedSignal, page 65

Business version of Apple's EMate on tap

By Kim Girard

BUSINESS USERS are eagerly awaiting a new version of the Apple Computer, Inc. EMate — one without the funky, shiny dark-green case designed for children.

For many users, the EMate is perfect for writing short documents and surfing the World Wide Web from the road. A cross between a handheld and a laptop with the heft of a lunchbox, the EMate uses the Newton 2.1 operating system and has a PC card modem. The 4-pound machine has a 25-MHz ARM 710A processor, 3M bytes of RAM and a backlit screen.

In online discussion groups, the lingering question is, when will Apple release a business version of its education-friendly handheld — a machine you won't feel silly about pulling out at a business meeting.

Apple isn't talking, but analysts said the EMate 1000 is due within several months and said Apple acting CEO Steve Jobs may be considering the EMate part of the firm's strategy to enter the network computer market. Network computers are low-cost, stripped-down PCs for accessing the Internet and corporate networks.

APPLE EMATE 300

Operating system: Newton 2.1

RAM: 3M bytes

Weight: 4 pounds

Price: $799

EMate, page 65

Compaq NT model extends reach

Compaq takes on workstation vendors with new NT models.

By April Jacobs

WORKSTATION USERS looking for price breaks and performance parity are getting more options from the Wintel camp as PC market leader Compaq Computer Corp. continues to push new Windows NT models as a Unix alternative.

The Houston-based company, which entered the workstation market a year ago, plans to extend its reach into the price-sensitive low end and the performance-based high end in the next year. It is an attempt to take on workstation vendors such as Hewlett-Packard Co., Sun Microsystems, Inc. and IBM, all of which have long histories in the workstation market, analysts said.

Pricing could pull some users over the fence, with Compaq workstations using commodity Intel Corp. processors and averaging $7,000 to $10,000 less than competing RISC-based systems.

Compaq, page 67

SERVERS

Digital builds on Alpha line

By Jaikumar Vijayan

DIGITAL EQUIPMENT CORP. last week pumped up its Alpha server line, even as analysts were debating the long-term future of the Alpha chip following a settlement between Digital and Intel Corp.

The highlight of the announcement was the new dual-processor AlphaServer 1200, based on the 400- and 533-MHz Alpha chip and supporting up to 2G bytes of memory.

The midrange system supports Windows NT, Digital Unix and OpenVMS operating systems. It will target small Internet service providers as well as database, data warehouse and data mart applications. Prices start at about $16,700.

"It looks like it is coming in at a pretty good price. It is a nice replacement for the [previous] 2100" midrange system, said Rob Young, VMS manager at Alpha user BDP International, a freight shipping company in Philadelphia.

Digital also introduced chips,

Alpha, page 67

©1997 InterSystems Corporation. InterSystems Caché is a trademark of InterSystems Corporation. Other product names are trademarks of their respective vendors.

RDBMS had a good run.

Your relational database once ran well, but now you frequently encounter the demons of technological obsolescence. However, relief is in sight. You can now develop transactional applications without the limitations of relational technology. With Caché, the post-relational database, from InterSystems. Caché provides the performance and scalability needed for complex transaction processing. Unlike "object-relational" products that layer objects onto a relational database engine, Caché incorporates a lightning-fast *transactional multidimensional data model* and advanced object technology. In addition, even in backward compatibility mode with SQL for legacy applications, Caché achieves a several-fold improvement in performance and scalability. Now is the time for Caché, the post-relational database, available for GUI and Web-based applications on Windows 95 and NT, OpenVMS, and major UNIX platforms. Call us at (617) 621-0600, or visit our website at www.intersys.com.

CACHÉ™
InterSystems

Post-Relational Database.
New Dimensions of Transactional Performance.

EXCITING DEVELOPMENT

AlliedSignal

CONTINUED FROM PAGE 63

disk systems and networks down, something that is even harder to do in a newly centralized data center (see chart, page 63).

"We want to limit exposure to our customers [users] and making them endure shut downs," Fawns said. "They don't want to know that the data is being moved; they just want access."

TDMF can move data without systems interruption among disk subsystems from various vendors. Competing tools from IBM, Hitachi Data Systems Corp. and EMC move data only among their own company's disk arrays.

And though some users may shy away from the expensive price tags on mainframe-based data replication schemes — often hundreds of thousands of dollars — the trend of data center consolidation is helping to bring the price down.

For example, instead of buying licenses for several disk subsystems at the nine data centers it used to maintain, the American Red Cross was able to afford EMC's Symmetrix Remote Data Facility software when it pared down to two data centers, said Tom Woteki, the Red Cross' chief information officer.

But these tools aren't just for the mainframe world. As more Unix and Windows NT servers find their way into the data center and open systems storage demand explodes, the same data shuffle will be needed for these disk systems.

To address that, Ark Research Corp., a San Jose, Calif., start-up, next month plans to ship a system that performs high-speed, real-time data replication between different Unix and Windows NT disk subsystems from any vendor.

The Ark System CDAS/2000 sits between servers and disk subsystems and can quickly mirror client/server data. This mean that if a server goes down, the system switches over to a mirrored copy on a separate disk system without any delay. Officials said the hardware system is meant to work alongside mainframe tools and server clustering schemes such as Microsoft Corp.'s Wolfpack.

The Ark System will be unveiled at Comdex/Fall '97 next month. It costs $8,995. □

EMate 1000

CONTINUED FROM PAGE 63

Apple isn't discussing plans for EMate or its other personal digital assistants (PDA).

Graham Barron, a Web developer at Red #40, a Web design company in New York, said an Emate business model should be smaller, sport a color monitor and have a sleeker case. He said he is interested in an EMate if it is integrated with Apple's network computer strategy.

"The EMate fits nicely as an adjunct to a desktop machine," he said.

Carlos Pero, a project coordinator in digital publishing at the *Chicago Tribune*, said he wants to use an upgraded EMate to take notes during meetings.

"I just need something that allows me to type and easily download to my computer when I get back to my desk," he said. With the upgraded EMate, Pero said, he wants real-time access to his network so he can troubleshoot when necessary. He also wants a way to read Microsoft Word files without having to convert documents.

The Largo, Fla., Police Department is using the EMate in police cruisers and expects to get an upgraded business model of the system within several months. The department uses modem cards in the EMate's one PC card slot to let officers connect to a wireless Cellular Digital Packet Data network.

Sgt. Brian McKeon said the EMate is far more cost-effective than laptops. It is also more durable than laptops, which are prone to damage and are more heat-sensitive when locked in cars all day.

But other users don't see much use for the EMate. Tod Caflisch, director of information systems at the San Antonio Spurs Basketball Club Ltd. in Texas, said, "There's not a lot of status in sitting on an airplane playing with a PDA when you can pull out a laptop." □

Advertisement

Reliance for Security and Flexibility

Philippines Social Security System relies on the strength of PATROL to manage its distributed computing system

When the Philippines Social Security System (SSS) decided it needed a strong tool to manage the distributed Oracle databases and Unix servers across its nine fully functional data centers, it chose the PATROL product from BMC Software.

"Our aim was to stop the IT department from getting trapped in a cycle of systems failures which commonly occurred due to database errors and crashes. In addition, our huge database of applications, systems resources and files needed automated enteprise-wide monitoring and coordination along with proactive systems management to analyze and control the performance of our distributed computing environment," says Tony Maralit, manager, database administration group, SSS.

The SSS evaluated various products and found, with the exception of PATROL, they did not support all multiple platforms in the organization. In particular, PATROL was the only evaluated product that could support SSS machines running on DEC Ultrix.

"With PATROL's multi-vendor support, its ability to improve management efficiency and speed up system maintenance, through the automation of many routine tasks, it was the natural choice," Maralit explains. The SSS also took into account the strong local support and the technical expertise that would be provided by BMC Software's distributor Leverage Systems Technologies; and that with PATROL's product-specific modules, time and effort required to train staff would be substantially reduced.

The 16 million members of the government-owned SSS access a range of financial services, such as housing, salary, and stock share loans, through 54 branches across the country. Of these, nine branches serve as fully-functional data centers.

The results with PATROL implemented were immediate. Reduced downtime led to improved customer service and heightened staff productivity. Costs relating to technical support were reduced too as the SSS no longer had to rush support personnel to various branches to correct system errors and restart crashed systems.

PATROL product-specific expertise for monitoring and automating processes, also leveraged the technical skills of the administrative staff and helped reduce training requirements, as well as administrative overheads. Reporting also became more efficient as PATROL kept automatic and regular track of network and database activity. PATROL easily addressed the issue of central monitoring of remote Oracle databases as it automated and centralized the control of critical elements.

Currently, PATROL consoles are running on the organization's SCO Unix, DEC/OSF1 and IBM RS/6000 machines. Its agents are running on SCO Unix, DEC/OSF1, IBM RS/6000, Sun Server and DEC Ultrix machines. All databases and Unix machines in the remote offices are monitored centrally from the head office using PATROL. With proactive systems provided by the product, only two database administrators and two systems administrators are needed at the head office to monitor and control the databases and Unix machines in all nine offices.

The SSS is now planning to establish a back-up and recovery center with an additional license of PATROL. "To be successful in a changing global marketplace, an organization must be flexible and able to address new business opportunities," explains Maralit. "Hence, each SSS data center has its own database to help it respond quickly to the local environment.

"PATROL is event driven and can manage virtually any application providing a pragmatic alternative to centralized corporate databases. As a result, we now have PATROL-based management control from the head office," says Maralit. "We would like to have the same flexibility and support for the back-up and recovery center, which is why we have requested another license."

"DIGITAL™ *is supplying PATROL® software with every AlphaServer system we ship worldwide, as well as reselling PATROL. We do this for a reason. PATROL supports the applications, databases, and platforms our customers rely on, and it integrates seamlessly with the DIGITAL ServerWORKS management solution our customers are already using.*"

Jesse Lipcon, Vice President AlphaServer Business Segment, DIGITAL Equipment Corporation

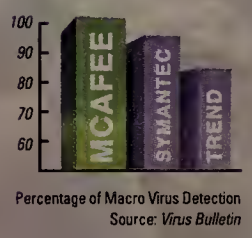
PATROL

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811 6766

BMC SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software, Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997, BMC Software, Inc. All rights reserved.

Go explain to the CEO why you thought 94% virus defense was good enough.



Percentage of Macro Virus Detection
Source: *Virus Bulletin*

Let's talk percentages. If your anti-virus package delivers 94% detection, there's still a 6% chance you'll be totally screwed. And when that happens, there's exactly a 0% chance the CEO will understand. Fortunately, there's McAfee, the anti-virus defense with 100% protection.

BLOCKS EVERY POINT OF ENTRY

McAfee Total Virus Defense (TVD) Suite goes beyond traditional anti-virus protection to provide 100% network security. It extends our number one anti-virus software to protect all points of entry—the client, server and internet gateways. But viruses aren't the only threat to your network. TVD prevents attacks by disgruntled employees and internet hackers. With bulletproof client and server encryption, authentication and firewall software, TVD keeps the wrong people away from your data.

CLIENT SERVER E-MAIL WEB
TOTAL VIRUS DEFENSE

PROTECTION FROM VIRUSES THAT DON'T EVEN EXIST YET

SECURECAST

All McAfee anti-virus products include support from AVERT, our Anti-Virus Emergency Response Team. With research centers worldwide, you get online support 24 hours a day. Also, our unique SecureCast feature automatically pushes updates and alerts directly to your PC to protect you from the latest virus strains—like the new Office97 macro viruses.

CHOICE OF THE FORTUNE 100

100% detection. 100% hacker protection. The choice of 80% of the Fortune 100. Now those are numbers even your CEO will understand. For more information, call 1-800-332-9966, department 321. www.mcafee.com

Designed for
Microsoft®
Windows NT®
Windows®95

MCAFEE®
Network Security & Management

results from independent industry research from Virus Bulletin, VSUM Certification Results, Secure Computing, Nikkei Personal Computing, © 1997 McAfee Associates, Inc.
products are trademarks of their respective holders.

Compaq

CONTINUED FROM PAGE 63

Users said they like the Pentium and NT-based workstations for several reasons, including their lower price than RISC-based systems such as those from HP and Digital Equipment Corp.

Users also said it is easier to administer Windows NT workstations with Windows NT servers than it is to support Unix-based workstations and Windows NT servers.

NT IS BETTER

Larry Garden, manager of technical operations at Brewers Retail, Inc. in Mississauga, Ontario, said he has about 1,250 workstations that run Windows NT Workstation as well as more than 40 Windows NT servers. He has been moving users away from Sun SPARCStations because he finds the NT environment easier to manage.

But the company will continue to use Sun servers for its Oracle database because performance is better, Garden said. "Most of my users are now aware they can run all their applications just as well on NT-based workstations," he said.

Analysts said that although Compaq's strategy to lead the NT workstation market is sound, it may have trouble reaching high-end users, particularly in specialized areas that require extensive partnering with application developers.

To that end, Compaq announced low, midrange and higher-end systems over the past six months with Pentium Pro and Pentium II-based configurations that feature three-dimensional graphics support, dual-monitor support and Unix interoperability through third-party software aimed at engineering and high-end financial users.

John Dunkle, president of Workgroup Strategic Services, Inc. in Portsmouth, N.H., said users with CPU-hungry applications such as intense 3-D graphics may remain loyal to RISC-based systems until NT has wider third-party applications support for applications such as 3-D graphics and databases.

He said competitors such as IBM have far more experience in the workstation market and extensive software partnerships, making them attractive to high-end users.

The Pentium processor also has to prove itself in the high-end workstation market, Dunkle said. □

DEC builds on Alpha

CONTINUED FROM PAGE 63

ranging from a 500-MHz upgrade on the AlphaServer 800 to a 725-MHz version on the highest-end 8400 model.

Last week's announcements symbolize the dual-processor strategy that Digital is expected to continue in the short term following the settlement with Intel.

Under that plan, Digital will offer high-end Windows NT-based Alpha systems for businesses willing to pay extra for the higher performance. At the same time, Digital will continue to aggressively push Wintel boxes for a broader market.

But Digital's settlement with Intel could result in an accelerated move away from Alpha technology in the long term, analysts said.

Digital and Intel last week agreed to end their patent-infringement lawsuits under a deal in which Intel will buy Digital's Alpha semiconductor manufacturing operations for $700 million. Digital will continue to design and develop future Alpha chips, which Intel will manufacture for them.

Although Digital has promised to continue with Alpha for the foreseeable future, most analysts said the company's deal with Intel means Digital will quickly cut over to the emerging IA-64 chip architecture that Hewlett-Packard Co. and Intel are developing.

Users said Digital's deal won't cause any near-term disruptions, although questions remained about the future (see story, page 33).

Terry Shannon, editor of the "Shannon Knows DEC" newsletter in Ashland, Mass., said that in the short term, "the Alpha road map will remain intact. All that is happening is that Digital is going the 'fabless' route." □

Advertisement

Smooth Transitions

Louis Poulsen & Co. smoothes their transition to SAP R/3 and open systems with PATROL

Denmark's Louis Poulsen & Co. A/S is known internationally as the manufacturer of the world-famous PH lamps, and as sellers of electrical appliances. Louis Poulsen has its production wing based in Denmark, but sales and distribution offices are spread around the world on four continents. Consequently, it is a company with simultaneous requirements for advanced production management, effective logistics, and continuous budget control across a geographically distributed environment.

To more effectively meet these requirements, Louis Poulsen decided to move their IT operations from an IBM mainframe system to an SAP R/3 solution running on IBM RS/6000 hardware with the Informix RDBMS.

The benefit is obvious when the entire system is running smoothly – no matter where in the world requests come from, everyone receives up-to-date and exact information. However, when things are not running smoothly, the problems are also obvious.

Louis Poulsen realized they could more effectively utilize client/server solutions if they made automated management part of their overall management strategy. Their first step was to introduce the IBM NetView product for management of their network environment. The next step was to incorporate automated application and database management through the PATROL® Management Suite of products from BMC Software.

Peter Jacobsen, manager of IT operations states that, "without a doubt, automated monitoring of the Informix database, especially the PATROL features that help ensure log files do not overflow, has helped avoid a number of situations that would otherwise have resulted in an outage."

When BMC Software announced in 1996 a PATROL Knowledge Module that would proactively manage SAP R/3, it was an easy decision for Louis Poulsen to trial the product. "SAP R/3 comes with a systems management tool called CCMS," says Jacobsen, "but to use it you need manual interaction. PATROL gave us the ability to automatically monitor relevant R/3 parameters and, at the same time, have information about them presented to us in context with other information from PATROL about our databases and platforms. With PATROL, we get a complete overview about how our application environment is operating."

Through PATROL, Louis Poulsen learned of a number of important parameters in their application environment that could be monitored and tuned to support higher application availability and improve performance – parameters they didn't even know the existence of before PATROL. Now, at any time, they have instant access to this important information. Says Jacobsen, "With PATROL, we have a tool that allows us to drill deep into our systems, applications and databases for information. Plus, PATROL lets us know if changes we are making in one area of our environment will have a negative impact on other areas. There are still many things we have to learn about PATROL, but we definitely know it is necessary for future management and tuning of the system as well as our insurance for keeping up with the end users' demands for availability."

"SAP *believes that PATROL® currently offers one of the leading solutions for in-depth monitoring and management of R/3. It is important that our customers have management tools like PATROL that can ensure optimal performance and high availability.*"

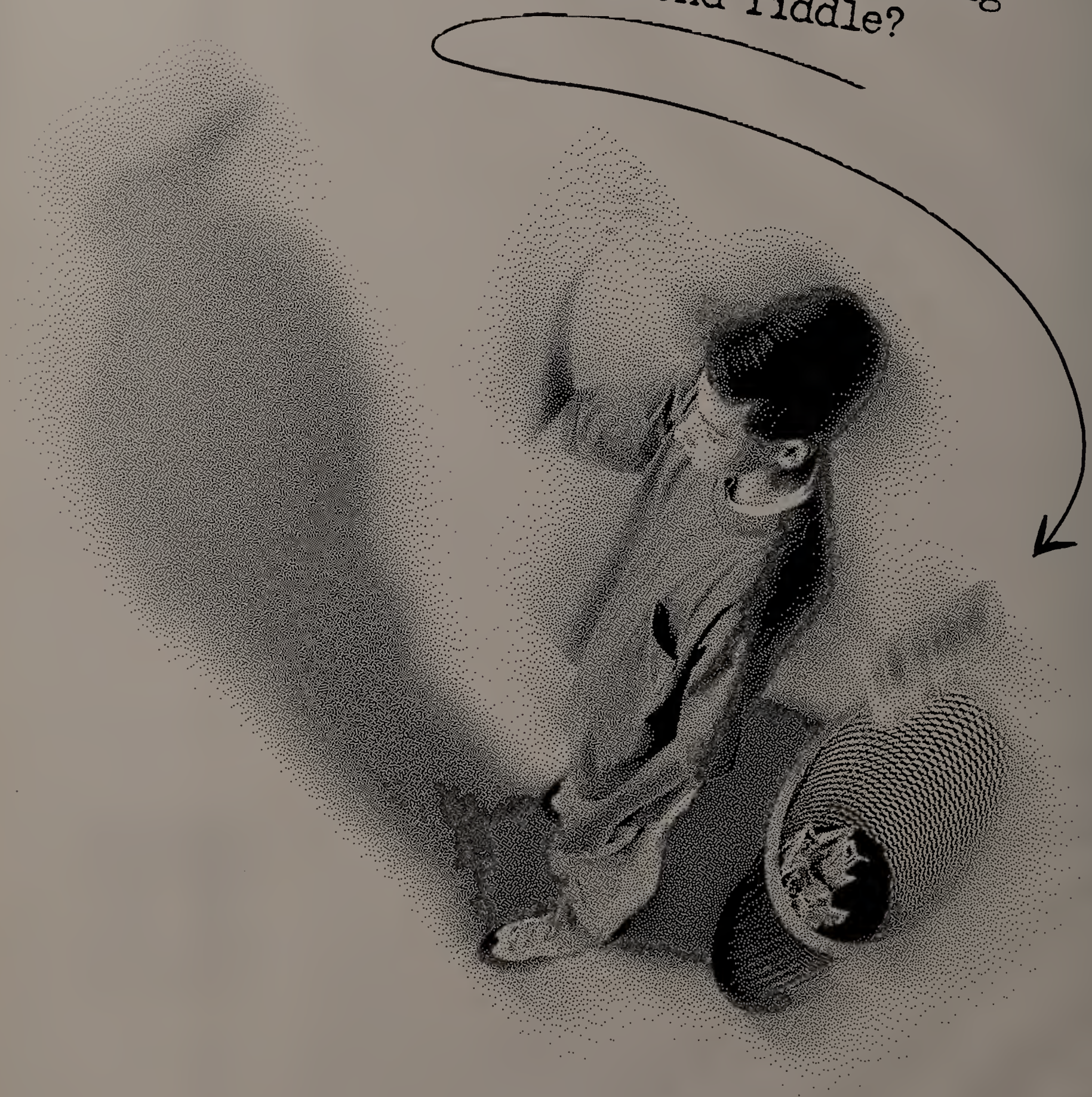
Dr. Arnold Niedermaier,
Technology Marketing
SAP AG

PATROL

Top industry leaders are relying on PATROL for a reason.
To find out why visit us on the Web at: www.bmc.com/patrol
Or call today: 800 811-6766

BMC® SOFTWARE
www.bmc.com/patrol

BMC Software, the BMC Software logos and all other product or service names are registered trademarks or trademarks of BMC Software, Inc. in the USA and in other select countries. ® and ™ indicate USA registration or USA trademark. Other logos and product/trade names mentioned are registered trademarks or trademarks of their respective companies. ©1997. BMC Software, Inc. All rights reserved.



America's IT industry. The best in the world. But we're throwing away our leadership. Because our knowledge and skills aren't being passed on to enough of our young people. Tech Corps gives your corporation a vehicle to change that. By supporting a grassroots effort to enhance teaching and learning through technology. And give students the skills they need to keep our country number one. Discover the rewards of becoming a Tech Corps Corporate Sponsor. 508/620-7751 • http://www.ustc.org

TECH CORPS

America needs to know.

Organizations already providing national sponsorship include
Cellular Telecommunications Industry Association Foundation (CTIA), Digital Equipment Corporation, and MCI Foundation

Overview

International Data Corp. (IDC) believes that 36-track tape technology will ship well into the next decade and will maintain a dominant position in the high-end half-inch installed base for at least the next five years. Our research shows that 36-track technology is well-suited for high-access, performance-sensitive small object tape workloads. The large installed base of 36-track drives may further elongate the technology's life cycle.

ILLUSTRATION BY CHRISTOPHER BING

IDC
INTERNATIONAL DATA CORPORATION

SOLID INVESTMENT: Many companies have made tape their investment of choice.

36-Track Tape is Alive and Well and dominating high-end interchange workloads

By JOHN McARTHUR and DAVID VELLANTE
INTERNATIONAL DATA CORP.

Highlights

- 36-track tape will continue to dominate high-end data interchange workloads for the foreseeable future.
- Vendors are continuing their investments in higher-performance and lower-cost 36-track devices.
- Understanding workloads and applications can help users select the right technology.
- Application-specific middleware investments are abundant for 36-track technology.
- Data interchange and document/imaging management workloads are a "sweet spot" for 36-track technology.

Square tape technology or, more specifically, 36-track tape, continues to be the mainframe and midrange tape technology of choice. IDC research shows that 36-track technology accounts for more than 80% of vendor revenues for half-inch tape drives supporting high-end and mid-sized system applications.

Introduced as the data interchange standard for tape in the early 1980s, half-inch cartridge technology has evolved over the past two decades. One breakthrough occurred in the late 1980s with the introduction of 36-track technology,

The introduction of 36-track technology doubled track density, raised performance and improved reliability of half-inch cartridge technology.

which doubled track density, raised performance and improved reliability. In the last decade, 36-track performance has been increased further through controller, drive, robotic and application-specific software enhancements. Investment protection for the media has also been provided; today's 36-track drives can read—and many can write to—18-track cartridges.

Even as vendors develop higher-capacity, high-performance tape drives, their investment in 36-track technology continues. StorageTek in particular has enhanced 36-track performance and automation with faster controllers, libraries and improved tape handling techniques. The company recently announced that its Virtual Storage Manager, which is to begin shipping in early 1998, will support both TimberLine 36-track tape and high-capacity RedWood tape. Sutmyn Storage is shipping a "virtual tape" solution with support for 36-track tape. IBM recently announced 36-track offerings for the midrange market. Finally, at least one 36-track tape manufacturer—StorageTek—is planning to deliver Fibre Channel connectivity for 36-track tape.

Leasing companies have also endorsed the technology by making 36-track tape their investment of choice. The wisdom of this strategy is demonstrated by high used equipment values and a scarcity of product. Perhaps most importantly, application software and middleware vendors continue to develop application-specific solutions that support 36-track technology.

Even as vendors develop higher-capacity, high-performance tape drives, their investment in 36-track technology continues.

Applications and workloads

To better understand the application of tape technology, IDC uses a three-dimensional model, consisting of:

- Tape workload
- Application
- Industry

Tape workload describes the type of activity performed by the tape devices. It includes:

- Backup (for onsite application

Application software and middleware vendors continue to develop application-specific solutions that support 36-track technology.

Matching access time to technology

Required data access time (seconds)*	Disk	Virtual tape	36-track with high-speed robotics	Optical	High-capacity tape
<1	X	X			
<30		X	X		
<60		X		X	X
>60		X		X	X

*Data access times depend highly on workload characteristics.

recovery, offsite disaster recovery and application testing)
- Archival (including near- and long-term archiving)
- Data interchange (where tape is the lowest common denominator of data exchange)

Application refers to the type of business activity supported by the technology. IDC uses four categories to describe application:
- Business processing
- Decision support
- Collaborative computing
- Scientific

Business processing refers to traditional activities that support business-critical operations, such as accounting, HR and payroll. OLTP and database-intensive applications are also in this category. Such applications tend to be mission-critical (24x7) and update-intensive, and have highly random access patterns. These environments show high levels of tape use, with tape data sets created to support report generation, report archive and backups for application recovery, data interchange and application testing.

Decision support applications environments (which may involve a data warehouse) typically employ OLAP, data mining and data analysis tools to give users information access. These applications tend to be bandwidth-intensive with heavy read activity, often reading the "data interchange" tapes created by business processing workloads. They tend to be business-critical (i.e., 8x5) but are not necessarily mission-critical.

Collaborative computing applications, such as E-mail and Lotus Notes, are often referred to as "workgroup" computing. Like business processing and decision support applications, they tend to be read-intensive but have a more unstructured data content.

Scientific applications are compute- and bandwidth-intensive, and vary greatly in data and content types. They tend to have larger I/O request sizes with a mixture of read and write intensity, and frequently (i.e., in the case of geospatial applications) require enormous tape capacities.

Data life and data access patterns are often a function of *industry*. For instance, banking applications such as checking and credit card tend to be on predictable monthly and annual cycles. Transactional volumes are affected seasonally (especially credit card activity), but the highest activity period for credit card billing inquiries and checking account statement inquiries tends to occur shortly after the statements are sent to customers.

Data (in the form of reports) will likely be kept on disk or fast tape for the first 30 to 60 days, then migrated to deep archive as inquiry activity declines. Restoration to high-performance 36-track tape or disk may be required to support year-end reporting and statement processing.

Insurance applications, such as claims processing, are most affected

Business processing environments show high levels of tape use, with tape data sets created to support report generation, report archive and backups for application recovery, data interchange and application testing.

Data life and data access patterns are often a function of industry.

not by predictable monthly and annual cycles, but by less foreseeable natural disasters and seasonal factors such as weather. As a result, extremely high data access rates may be required during times of "disaster."

Document management

Document management and imaging, which is emerging as a tape-intensive environment, is hard to classify. Is it an application or a workload?

IDC characterizes document management as an archival workload that supports a variety of applications. It may require near- or long-term archiving and might lend itself to multiple alternative technologies like tape, optical or magnetic disk, depending on data life, data access patterns and cost/performance tradeoffs.

In many document and image management applications, data moves through a hierarchy, from higher-performance, higher-cost technologies to lower-performance, lower-cost ones. Early in the life of a data object, data may be stored on disk. But the subsecond response time of disk products comes at a high cost, and once the use of the object is primarily customer service-related, the business value of subsecond response time falls off dramatically.

In many customer service applications, response times of 30 seconds are acceptable and dramatically more cost-effective. For these applications, high-performance 36-track tape combined with high-speed automation is the next logical choice for object storage.

This tape strategy is often used in institutional investor applications with daily report cycles. In such applications, report access frequency diminishes rapidly with time. As a result, data is likely to be kept on disk or high-speed tape for the first few days to months, then migrated to high-capacity, slower tape for deep archive as access frequency falls off.

For applications such as credit card image statements and check image processing which capture images on a daily basis, but generate reports on a monthly basis, a better strategy may be to write image data directly to tape until reports are sent to customers, then migrate data to disk when access frequency increases after customer statements go out.

Document management and imaging can be found in support of business processing applications, such as claims processing in the insurance industry, HR applications (e.g., resume storage and retrieval), or the storing of portfolio information in the brokerage industry.

Each application and industry differs in the data access patterns and required response time to meet expected service levels. A range of technology exists to meet service levels and access patterns. The challenge for users is to match the performance cost with business value.

Where does 36-track tape fit?

Factors to consider when choosing a tape technology include average data set size, data access characteristics, drive performance, controller performance, connectivity options, robotic performance, scalability, application and middleware software support, and cost.

As with disk storage, one size won't fit all. IDC believes 36-track tape will continue to dominate high-end data interchange workloads for the foreseeable future. Applications that require high data access frequency, less than a full volume of data per request and access times of less than 30 seconds remain the 36-track sweet spot, especially when combined with high-speed automation and application-specific middleware supporting access at the data set level and not the volume level.

About the authors

As IDC's Research Director, Asset Management Storage, John T. McArthur provides residual and current fair market value estimates for storage products to leasing companies, equity investors, equipment manufacturers and technology users. He also helps IDC clients develop asset management strategies.

As Senior Vice President, Systems, Software & Storage Research, David P. Vellante directs research activities in the areas of commercial systems and software, which includes storage. He has overseen IDC's examination of critical issues such as the future of enterprise information management.

What kind of people report their organization for illegally copying software?

The answer: Anyone.

When people call SPA to turn in an organization for illegally copying software, it's because when someone steals software, the rest of us end up paying for it. Who's SPA? We're the Software Publishers Association, a non-profit organization committed to education about and enforcement of laws that protect computer software.

Get the facts.

Copying software is against the law. To clean up your software or to report someone who should, call our Piracy Hotline at **(800) 388-7478**; or see us on the World Wide Web at **http://www.spa.org**.

SPA

Don't Copy That Floppy™

Launch ads focus on IBM Financial & Accounting Solutions and Web Publishing Internet Solutions.

The ads in the campaign feature the IBM Business Partner emblem followed by the line, "One of the many solutions available from IBM Business Partners."

So what exactly are IBM Business Partners and what can they do for small businesses? These ads tell the story. They also include a handy toll-free number readers can use to find their nearest IBM Business Partner.

the "how can I get my foot in the door of small business?" solution

Exactly what do we mean by commitment? Let's put it this way: we've designed our new $35 million small business advertising campaign around you. Look above and see for yourself (note the nifty IBM Business Partner™ emblem). It means IBM Business Partners are the ones who are delivering the hardware, software and the know-how to help small business. Not IBM. And to take this commitment up a notch, we've created an additional campaign that further demonstrates your expertise. Best of all, we're sending the sales leads straight to you. So be on the lookout. For more information, go to www.ibm.com/partners

IBM

Solutions for a small planet™

IBM [illegible] are trademarks of International Business Machines Corporation in the United States and/or other countries. The IBM logo is a registered trademark and the IBM Business Partner emblem is a trademark of International Business Machines Corporation and are used together under license. © 1997 IBM Corp. All rights reserved.

Managing

WORTH all the fuss?

THE YEAR 2000 IS CAUSING A PANIC IN SOME CIRCLES. BUT SOME EXPERTS SAY THERE'S NO NEED TO WORRY. HAVE VENDORS AND THE PRESS BLOWN IT UP INTO AN ARMAGEDDON? IT DEPENDS ON YOUR CIRCUMSTANCES.

By Gary H. Anthes

DAVID ZADIG

Rick Flagler, IS manager at Miniature Precision Bearings uses a map with blue and red squares to track the progress of his company's year 2000 project. Systems that need fixes are in red, and those that are fixed are in blue. "They used to be all color-coded red," he says. "But now, the [map] is predominantly blue."

RICK FLAGLER, INFORMATION SYSTEMS MANAGER at Miniature Precision Bearings Corp., says he originally "freaked out" at his year 2000 problem.

He also freaked out over a consulting firm's $2 million estimate to fix the problem — for just one of the Keene, N.H., company's divisions. Instead, Flagler's group developed its own methodology and conversion software. He now estimates he'll do the whole job — on millions of lines of IBM AS/400 Cobol, RPG and C code — for less than $200,000.

YEAR 2000

Flagler is one of a growing number of IS managers who are finding that Jan. 1, 2000, won't end the world as they know it. Vendor and press hyperbole notwithstanding, there are ways to approach the problem — and some lucky circumstances — that allow them to sleep nights.

Indeed, some companies and federal agencies are spending millions on pound-foolish

Worth all the fuss?, page 70

YEAR2000

WORTH all the fuss?

CONTINUED FROM PAGE 69

projects when penny-wise patches might do, says Thomas Giammo, the former head of IS at the U.S. Patent and Trademark Office. In many cases, year 2000 projects are driven more by fear than by rigorous analysis of need, he says.

"The alarmists have seized the field, and the burden of proof seems to be on those who say it's not that critical," Giammo says.

"I can see where some companies are in trouble, but vendors are really playing on the emotions of companies that are not in trouble," says Chuck Meehan, director of management information services at Insituform Technologies, Inc. in Memphis. "Some companies are spending huge amounts to change out their total software, which is asinine."

HEAT FROM THE TOP

According to Meehan, IS managers are being pressured by CEOs who have gotten scare letters from vendors, auditors and lawyers. "These IS directors have just been beat over the head," he says, "but we've been our own worst enemies because we haven't taken the lead on this."

Although it clearly would be foolish to dismiss all year 2000 angst as unfounded, there are organizations that have little to fear from the date change. A company comfortable with the problem probably falls into one or more of the following categories:

- It started early, worked diligently and is now finished or nearly finished with conversion work.
- It has replaced its date-challenged legacy systems with client/server applications that proudly display four-digit year fields.
- Its software is provided by others, and its vendors or outsourcers have certified that they comply with year 2000 requirements.
- It has a world-class IS shop, with low turnover, plenty of legacy programmers, good control of source code, excellent documentation and a healthy budget.
- Its systems aren't date-intensive and don't affect daily cash flow.

There is some evidence that the wave of concern over the year 2000 may have crested.

A recent report from Forrester Research, Inc. said the problem has become "the most hyped issue in the history of IT." The Cambridge, Mass., IS research firm says companies it recently surveyed say they're spending 95 cents per line of code for year 2000 work, more than a third less than the oft-cited industry estimate of $1.50.

"Companies that have gotten into it are starting to say, 'Now that we are actually fixing code, this isn't quite as daunting as we thought,' " says Russ Maney, a director at Forrester.

Flagler says the following factors make him relatively comfortable with the year 2000 challenge: low IS turnover, good documentation, an early start on the problem, management commitment and internal staff dedicated to the project, a sound methodology and a decision not to convert noncritical reports and screens.

Flagler says he expects to be done with year 2000 work by year's end, but he concedes that he's less confident that his vendors and business partners will be ready on time. "The area I'm still uncomfortable about is outside the data center," he says.

Wayne Lambert, chief information officer at Colorado Compensation Insurance in Denver, is another member of the what-me-worry club.

"It's not a big issue for us because we rewrote our systems in 1992 to handle the century change," he says. They were overhauled again this year for client/server, and they remain year 2000-ready, he adds.

But like Flagler, Lambert admits to having less confidence in his software vendors and business partners. "We are asking for letters certifying they are Y2K-compliant or giving a date when they will be so we can test their applications," he says.

GOING OVERBOARD?

Alan Dechert, a software test engineer for the city of Sacramento, Calif., says some organizations are going overboard by making sweeping changes to their systems, especially by changing all two-digit year fields to four-digit fields.

According to Dechert, at least 50% of the year 2000 effort could be avoided by using "windowing" logic, in which programs assume that a two-digit date within a predefined range belongs to a particular century.

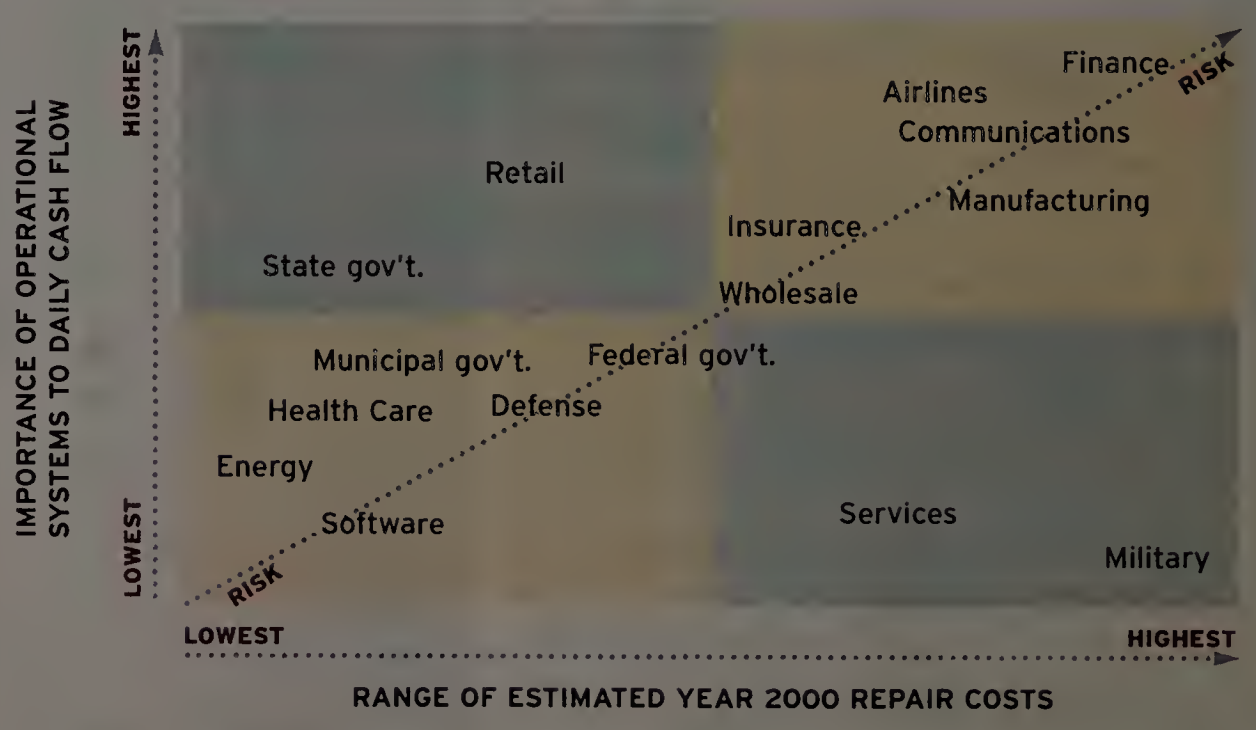
Members of the year 2000 minimalist school say it's cheaper and less risky to leave many programs unchanged and just fix them when and if they break. "If I fell asleep on the job for the next two years, the consequences would be minimal," says Dechert, who is writing a year 2000 test plan for Sacramento's Public Works Agency. The agency's key systems are billing applications, and invoices would be delayed just a day or two if date bugs had to fixed, he says.

But Ray Strecker, a vice president and year 2000 specialist at American Management Systems, Inc. (AMS) in New York, says the minimalist philosophy may have troubling legal implications. "If you're a firm with a substantial balance sheet, you have no

Year 2000 risk by industry

The more an organization's sytems affect daily cash flows and the greater the effort required to fix the year 2000 problem, the higher the risk that the organization will experience serious financial loss from the date change. For example, an insurance company's risk is greater than a municipal government's.

According to this chart from American Management Systems (AMS), the finance industry is at the highest risk, while the energy and software industries are at the lowest risk. Positioning on the horizontal axis was determined from estimates by software development experts such as Capers Jones. Positioning on the vertical axis is based on research by AMS.



Source: American Management Systems, Inc.

choice but to take the problem very seriously because that's the only action you can defend in court," he says.

But, Strecker adds, that doesn't mean there are no shortcuts. For example, you might leave unchanged an application that tracks 90-day work orders. It won't sort properly for a three-month period bracketing Jan. 1, 2000, but it will correct itself. "You just tell people, 'Look, manage through it; we are not going to change it,' " he says.

It's impossible to completely validate vendors' claims for year 2000 compliance, warns Leon Kappelman, co-chairman of the Society for Information Management's International Year 2000 Working Group. Testing is essential, he says, and it may also be necessary to set up filters to block noncompliant transactions from critical internal systems.

But no matter what you do, you won't know whether systems are compliant until the date change occurs, experts say. "You will never find all the date problems," Maney says. "Of those you do find, you'll never fix them all right. And of the ones you fix, you'll never test them all right."

'LA-LA LAND'

Many of the companies saying the year 2000 is no big deal are "in la-la land," especially those that haven't started their work, Kappelman says. For example, he says, a large manufacturing firm recently said it might use brand-new applications from SAP America, Inc. to solve its legacy year 2000 problems. "But they are a four-year SAP project," Kappelman says. "They should be doing triage — what do they have to fix now?"

As for those companies that might appear to be replacing legacy systems unnecessarily, there's a method to their madness, according to Kappelman. Under standard accounting principles, the capital cost of new systems can be amortized over several years, whereas "repairs" to existing systems must be expensed immediately. Also, it's a way for IS managers to avoid the suggestion that they're spending huge sums to remedy past coding blunders.

Patricia Boyce, a project leader at Scottsdale Insurance Co. in Scottsdale, Ariz., scoffs at the notion that the problem can be easily solved in the course of routine maintenance. The company is about 75% through its year 2000 project, which despite the use of an automated tool to convert date fields, has so far taken 17,000 hours from 30 people in IS, plus six outside consultants. The company employs 100 IS people.

Boyce agrees that windowing can be a valuable shortcut if used judiciously. The company expanded the year fields in its data files but left them unchanged on many of its 1,000 screens, and that may have saved 10,000 hours of effort, she estimates.

The sharply divergent views of the year 2000 problem at Scottsdale Insurance and the city of Sacramento possibly can be explained by how dependent they are on their applications. The insurance company's core systems are online applications that must be available nearly 24 hours a day for processing policy and claims information. But Sacramento's billing systems are batch systems that could be down for a day or so for repair without catastrophic consequences.

All the debate about windowing, application triage, automated tools and so on misses a key point about year 2000, says Bruce Webster, chairman pro tem of the Year 2000 Group in Washington. "I don't think it's a technically overwhelming problem, but I think it's going to whack us on the head just because I know how poorly corporations deal with software development in general."

Indeed, it seems likely that most organizations will get at least a little whack on the head from the year 2000 problem. But quite a few companies have found ways to limit their vulnerability. Realistically assessing that vulnerability is not easy. □

Anthes is Computerworld*'s senior editor, special reports. Senior editor Robert L. Scheier also contributed to this report.*

@ COMPUTERWORLD

What's the year 2000 problem like in your organization? Do you feel the issue has been hyped? Or is not enough attention being given to it? Share your thoughts in a forum this week on our Web site (*www.computerworld.com*), moderated by Rick Saia, associate editor for Managing.

YEAR 2000 SCOREBOARD

An occasional series on year 2000 trends, issues and statistics

It's looking uglier, Gartner says

With two years and two months to go, the outlook for beating the year 2000 problem isn't good. Bill McNee, a vice president and research director at Gartner Group, Inc. in Stamford, Conn., cites the following probabilities:

Many companies won't achieve compliance. Around the world, by the end of 1999, 30% of externally focused mission-critical systems and 50% of all systems will have failed to achieve full year 2000 compliance. In North America, 60% of all systems will be fully compliant, and another 30% will have achieved "operational sustainability," meaning the company will be able to function through work-arounds, triage and similar stratagems. Conversion takes up a big chunk of information systems budgets. Year 2000 conversions will take up 22% of traditional IS budgets through 2000.

Where the money will come from. Forty percent of IS-driven year 2000 spending will be taken from existing maintenance and enhancement budgets. The rest will come by delaying, canceling or scaling down strategic information technology projects and short-term crisis functions. "There's not enough money to do everything," McNee says, and the budget items most likely to lose out are training, "soft [return-on-investment] applications" and infrastructure upgrades. Even major applications such as SAP, Baan and Oracle will come under more scrutiny.

Much of the world is still waking up to the problem. While North American companies are well aware of the problem, that isn't the case across much of the globe. Companies in Latin America still don't believe there really is a problem, McNee says. And even in the U.S., many companies still haven't taken action, according to another Gartner analyst.

McNee spoke Oct. 6 at a Gartner Group Symposium session titled "Rethinking the IT Investment Paradigm." The event was held in Orlando, Fla.

— Allan E. Alter

@ COMPUTERWORLD

Looking for more information on the year 2000 problem? Visit our Web site and look through our Year 2000 Resources page (*www.computerworld.com/year2000/y2k_res1.html*)

I MANAGER PUTS A NEW PHILOSOPHY TO WORK

have reviewed, and you have doubtless read, numerous books about the "new economy," where the knowledge worker is king and managers have to focus on how to hire, retain and motivate scarce resources. Easy to say, hard to do. Here's how one manager seeks to transform himself into a "new manager."

LEILANI ALLEN

Guy Smith is manager of client services at a southern utility. His group of 20 information systems staffers is responsible for systems development, operations and the help desk. He's been with the company for 12 years and is completing his MBA.

In Smith's view, "with traditional managers, the big focus was on being tough-minded and maintaining authority. Traditional managers also tend to be analytic types who concentrate on performance metrics — the old 'if you can't measure it, you can't manage it' philosophy. Most managers in the IS profession today still fall into this category."

For Smith, "it's not just about the nuts and bolts of work life but also about perceptions. As managers, we have to, first and foremost, have relationships with our people. That means being genuinely concerned with how people feel about their work, their environment, their home life. A 'new manager' also is concerned less about exercising authority and more about being flexible and being willing to change."

That approach has paid off: There's been no turnover in his group. Others in his company say his style has opened communications between Smith and his staff, and between his staff and end users. Management has paid him the sincerest form of flattery: They've increased his responsibilities.

How does Smith put this philosophy to work day to day? By following some key principles.

Don't underestimate the impact you have on people. "One important factor is to recognize just how exquisitely sensitive employees are about what management is doing. I do a lot of thinking in my car on the way to work, and it's easy for me to become preoccupied with some issue. If I just walk into the office without saying hello, someone is bound to ask 'What's wrong with Guy?' My body language was sending a signal of worry or concern that had nothing to do with reality — yet that's what people focused on."

Show respect for people. "A chronic problem in today's workplace is missing meetings. How many times have you showed up for a meeting, and the other person wasn't there? That sends a message about how important people are in the grand scheme of things. Now, if I have to move a meeting, I apologize for the inconvenience. And when the meeting finally does occur, I don't just launch into the topic but ask everyone how they're doing. It only takes a minute, but it sends a message that they're important.

Don't just focus on facts. "One team leader had been accused of insulting a number of people who reported to him. His whole conversation with me was focused on the factual evidence of whether or not he had committed the act. The facts were on his side, and he therefore was ready to dismiss the situation. I had to help him see that the 'fact' was that people perceived he had done wrong — and that still had to be taken into account."

Don't rely on formal reviews to provide feedback. "People want immediate, individualized feedback on how they're doing. In IS, we've instituted quarterly reviews to provide ongoing feedback. But the most important review is just going out on the floor and praising people for what they're doing right. After all, the true purpose of a performance evaluation is to help the person succeed, not to punish them for failing to meet your expectations."

That's important in the actual review. "I recently had one with an employee who I thought might be very unwilling to accept criticism. I had a list of examples ready to go. But once we were in the review, the individual acknowledged the flaws but also wanted to hear about the positive aspects. I didn't start with the positive because I thought she would consider it patronizing. But what was important to her was that overall I saw she had done a lot of good things."

Finally, a manager has to constantly evaluate his or her own performance. "Recognizing the limitations in your own performance can make you a better judge of others. As I start work each morning, I consciously ask myself, 'Is there anything I learned yesterday that indicates I should change what I'm doing?' This may sound idealistic, but it's really a combination of idealism and pragmatism, and it's something each of us can do."

Every manager has opportunities to demonstrate that we really do "get it" about showing respect and support for our staff. Like Smith, we don't have to wait for an executive mandate or corporate training session to start dealing with people differently. It starts with one conversation, one meeting, one review. Changing ourselves — now that really takes toughness. □

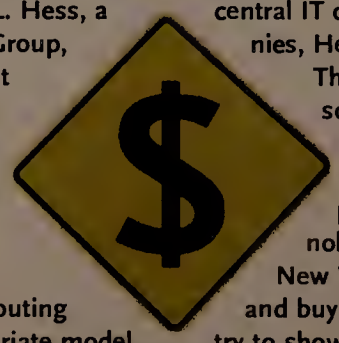
Allen's column deals with people issues that managers face every day but are reluctant to discuss openly. She is a director at Tenex, a management consulting firm in Burlington, Mass.

f.y.i.

Warning: Infrastructure spending ahead

You probably aren't spending enough on information technology infrastructure.

Companies that wish to embrace advanced practices, such as sharing distributed IT resources and data across the enterprise, must make a "major investment in infrastructure." That investment "will be something like 50% more than you were spending in the legacy environment," says Mark L. Hess, a vice president at Gartner Group, Inc.'s GartnerMeasurement benchmarking service in Stamford, Conn.



Hess estimates that fewer than 5% of companies have reached such an advanced level of enterprisewide distributed computing and says it isn't an appropriate model for all companies. But IS organizations hoping to build data mining and advanced workflow applications, secure intranets and extranets, and other enterprisewide applications are "seriously underestimating" the necessary increases in personnel, application development, networking and other costs. Responsibility for infrastructure will remain with the central IT organization in most companies, Hess predicted.

That 50% figure "probably sounds right if we don't do something to offset it," said Michele Larmoore, vice president of corporate technology at J. P. Morgan & Co. in New York. Users can't just go out and buy their own equipment. "I'll try to show people that we need to work together, plan ahead and share responsibility for enterprisewide data. . . . we have to convince users to have faith in the IT department." — Allan E. Alter

Nominations, anyone?

American Management Systems, Inc. (AMS) in Fairfax, Va., and Carnegie Mellon University's Graduate School of Industrial Design in Pittsburgh are seeking nominations for the eighth Awards for Achievement in Managing Information Technology.

The awards recognize senior executives who've made outstanding contributions to their organizations — and often their industries — through the effective use of IT. Nominations are due Nov. 26. Winners will be selected in March, and an awards dinner and ceremony will be held in Washington May 6.

For nomination forms, contact AMS at (703) 227-4246 or by electronic mail at awards@mail.amsinc.com.

Make Room.

When we designed our

new high capacity drive, common sense dictated it should also work with standard diskettes.

NOW AVAILABLE EVERYWHERE

PC Computing

"Over 300 percent faster than the [competitor's] drive." 10/97

The fact that we make the best selling brand of standard diskette had nothing to do with it.

Okay, so maybe it had a little bit to do with it. But the big news here is that with our new SuperDisk™ Drive, you can access 120MB of storage, up to five times as fast as standard floppies. And here's the kicker, it still works with 1.44MB diskettes. Just plug it into your PC's parallel port. Or look for SuperDisk LS-120 drives built into new PCs. To make more room, call 1.800.888.1889, ext. 3001 or surf www.imation.com.

IMATION
Borne of 3M Innovation

SuperDisk, compatibility symbol, Imation and the Imation logo are trademarks of Imation Corp. © Imation 1997.

Buyer's Guide

PRODUCT REVIEW: Tests by Computerworld and Client/Server Labs indicate that the leading Unix firewalls stand up well. But differences emerge in options and ease of use.

Great WALLS of FIRE

By Garrett Michael Hayes

BECAUSE EVEN the smallest company is vulnerable to attack when connected to the Internet, savvy managers everywhere are installing firewalls. The number of firewall products is growing almost as fast as the interest in installing them.

But which firewall do you choose? To help you make that decision, *Computerworld* asked Client/Server Labs to put several enterprise-level firewall products through their paces. We chose to focus on software-based solutions implemented on commonly available hardware. We also looked at a hardware-oriented alternative to software solutions.

Three of the packages we tested — Eagle from Raptor Systems, Inc.; FireWall-1 from Checkpoint Software Technologies, Inc.; and Gauntlet from Trusted Information Systems, Inc. — were run on a Sun Microsystems, Inc. Ultra 2 server configured with two Fast Ethernet cards, 128M bytes of memory, a 2.1G-byte disk drive and a 16-in. color monitor. A fourth package — Sidewinder from Secure Computing Corp. — ran on an Intel Corp.-based Compaq Computer Corp. system, private-labeled by Secure Computing and running a version of BSDI Unix.

SUMMARY

To give you a quick idea of our findings, let's just say that we tried ... we really tried to break through each of these products as hard as we could. But they just wouldn't bend under pressure. But there are always good and not so good features in every product. We discovered the following:

- Checkpoint's FireWall-1 is highly configurable, but there were errors in the documentation.
- Raptor's Eagle has good real-time monitoring, but its hardware configuration is more complex.
- Trusted Information's Gauntlet has good operating system integration but is too centered on the proxy service model.
- Cisco Systems, Inc.'s PIX is a dedicated single-function machine but has physical access limitations.
- Secure's Sidewinder was a snap to install, but because of a hardware configuration problem, we were unable to test the product any further.

TEST BED

The use of a software-based solution provides flexibility in selecting hardware to host the firewall. Most of the products we tested run on several Unix platforms, so selecting known hardware was less of a problem.

Applications designed to run on Windows NT platforms are beginning to emerge, but none appears ready to play at the enterprise level where the combination of strength, robustness and speed is crucial.

Our test environment consisted of the tested firewall system; two multi-CPU Intel-based servers running Windows NT 4.0 behind the firewall; and 48 PC clients running a mix of Windows NT Workstation 3.51 and NT 4.0 outside the firewall.

The client machines were connected to two 24-port 10Base-T switched Ethernet hubs. The hubs and one adapter on the firewall system were connected to a 100Base-T Ethernet hub. The two servers and the other adapter of the firewall system were connected to a 10Base-T Ethernet hub. This somewhat backward arrangement allowed us to simulate a really large "Big Bad Wolf" huffing and puffing at the firewall doors.

We could have run World Wide Web and file services on the same server that hosted the firewall software, but chose not to. It wouldn't have been possible with the hardware-only solution and wouldn't have provided a good comparison. And we felt it was unrealistic; a server housing firewall and other services is too vulnerable.

PUT TO THE TEST

Besides the basic tests relating to installing, configuring and adjusting the firewalls, we performed two types of stress tests. In the first, we "hammered" the firewalls by placing a simple but heavy traffic load on each firewall, using a modified version of Client/Server Labs' IntraMARK benchmark (see *www.cslinc.com* for an explanation of IntraMARK).

In this test, the 48 PC clients were used to generate Hypertext Transfer Protocol (HTTP) traffic against Web servers running on the two servers behind the firewall, with the firewall configured to allow HTTP traffic to and from only one of the servers. A single comparison run also was conducted with no firewall in place.

The good news is that none of the firewalls broke (or even seriously hiccuped) under the strain of a rack of machines. Each ran 40 virtual clients and had HTTP requests hammered against the system at a full-switched 10M bit/sec. In fact, in all cases the target NT servers keeled over from the load well before the firewalls were even puffing hard.

For the second round, we used the Internet Security Scanner (ISS) from Internet Security Systems, Inc. as a powerful set of tongs to see what we could pry loose from each of the firewalls. This high-intensity security probe software was used in two different modes against each firewall.

First, it was used in a targeted mode, designed to specifically probe more than 100 vulnerabilities in a standard packet-filtering firewall. Those vulnerabilities ranged from leaving default passwords in place to relatively obscure Unix system software exploits such as the "phf" program in a Unix Common Gateway Interface directory.

Second, it was used in a sort of "shotgun" mode, designed to probe for a wider list of some 150 vulnerabilities in the firewall and the hosts behind it.

One interesting observation emerged from our attempts to intentionally cripple a firewall to provide fodder for ISS's more obscure tests: All the systems we tested proved remarkably resistant to foolish configurations despite our best (or worst) intentions.

It proved to be a somewhat greater challenge than we imagined to "accidentally" leave a gaping hole in one of our firewalls.

Every time we tried to set a firewall up for failure, each package would warn us fairly stridently not to do what we were attempting.

@ COMPUTERWORLD

Earlier *Computerworld* articles on firewalls and links to other reviews are at our Web site: *www.computerworld.com/guide*

EAGLE

Vendor: Raptor Systems
Location: Waltham, Mass.
Web site: *www.raptor.com*
PLATFORM
Hardware: Sun's Ultra 2
Operating system: Sun Solaris 2.5.1
Price: $25,000 (unlimited)

A basic and functional package that needs just a bit more polish, Eagle appears to be a reasonably good product. With some improvements on the customer-service side (key management, more standard software media, and so on), it could become a strong contender.

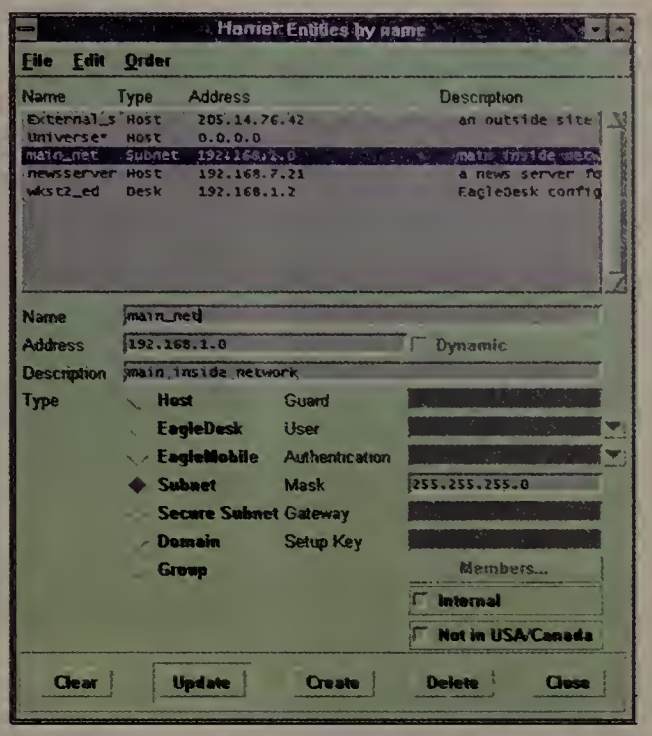
Our initial try at configuring a security policy failed because of a problem with the network configuration. The other tools we tested set up the network interfaces by using the information provided in the installation process; Eagle requested the same information but did nothing with it. Once we manually set up the interfaces, it was quite easy to define and change security policies.

We would have liked to have seen some tools that would help us decide the security policy, though there were several references to books on the subject.

It struck us as somewhat peculiar that this package was available only on digital audio tape when CD-ROM readers are much more common on workstations today. During the installation, it wasn't immediately obvious that we had to submit a license key request form to the vendor. In all, primary installation took 30 minutes, not including the time to get the key.

Monitoring of the firewall is done in real time through two different logs: a Gateway window and a Logfile window. The Gateway shows active connections and can be used to watch specific connections and even terminate them. The Logfile shows specific events, including all informative and warning messages. The Gateway window also provides an excellent level of assurance that the system is functioning.

Notifications can be triggered by any of the messages mentioned above. Those notifications can trigger actions such as playing audio messages, sending electronic mail, sending a page, launching a client program and sending various Simple Network Management Protocol (SNMP) messages. The firewall software starts automatically when the host system boots up. It can be turned off via the Gateway window.



Raptor's Eagle was easy to manage after it was set up manually

Two manuals covered installation and configuration. Clearly targeted at fairly skilled system or network administrators, the manuals had several good examples and screen shots showing the installer what he should expect at each significant point in the process.

Eagle seemed fairly limited in the proxy services provided; it included only the basic file transfer protocol (FTP) and Telnet proxies.

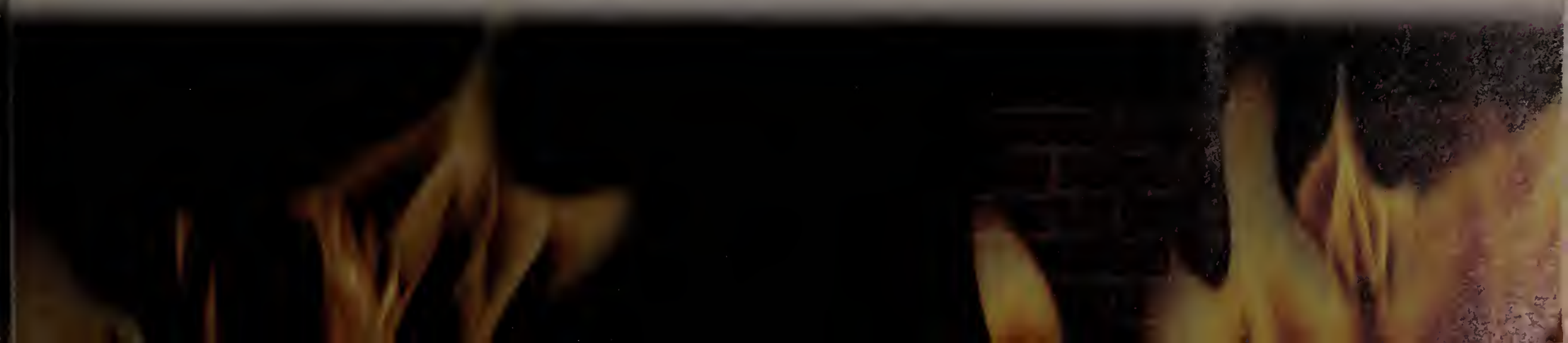
The list of authentication services they support was a bit broader. It included Security Dynamics, Inc.'s ACE/Server; Cryptocard Corp.'s Cryptocard; Accent Technologies, Inc.'s SecureNet Key; Bellcore's S/Key; Gateway password; TACACS+ and Remote Authentication Dial-in User Service (RADIUS)

Simplicity may have its virtues, though, because Eagle showed no vulnerabilities to the ISS probes when in the firewall-targeted mode.

The "shotgun" mode revealed three minor and one medium vulnerability: the presence of the rwho daemon, SNMP and traceroute, as well as a problem with predictable TCP/IP packets.

Raptor's customer support called back quickly and gave helpful answers in easily understood terms.

Great walls page 76



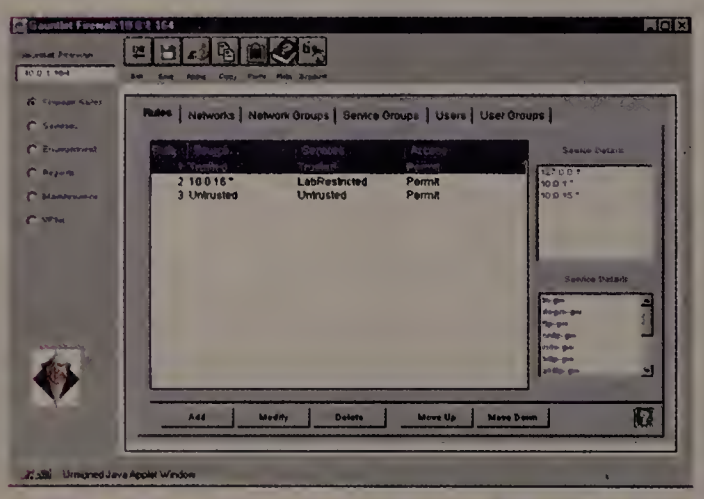
Great WALLS of FIRE

CONTINUED FROM PAGE 75

This was definitely one of the more pleasant experiences we have had with a customer support function.

FIREWALL-1

Vendor: Checkpoint
Location: Redwood City, Calif.
Web site: *www.checkpoint.com*
PLATFORM
Hardware: Sun's Ultra 2
Operating system: Sun's Solaris 2.5.1
Price: $18,990 (unlimited)



Trusted Information's Gauntlet generally worked well when reviewers were setting policies

Overall, Checkpoint's FireWall-1 is polished and well-organized. The product, sales force, engineering and packaging all lead to a very positive impression.

Defining a policy seemed easiest with FireWall-1. Although it may be either good or bad, depending on your point of view, even "unsafe" rules could be implemented easily. FireWall-1 would warn the administrator (occasionally multiple times), but would allow the administrator's judgment to govern.

Although FireWall-1 lacked the policy development tools for which we kept wishing, it did at least come with a sample policy file that could be used as a model on which to build your own policy.

Changing policies was easy. Selecting network objects, rules, and so on, and then choosing "modify" even let you change items on which other parts of the policy depended. Consistency checking was done on the whole set at once, so recompiling a policy might take some time on a very complicated setup.

The ISS probe found no vulnerabilities in the FireWall-1 firewall, and only two very minor vulnerabilities in the "shotgun" test — the use of SNMP and traceroute within the network.

One of the nicest features of the installation, which took us about 30 minutes, was that a demonstration license was included in the package. The full license registration process was available via Web browser and already had our key in it. After answering a few registration questions, we were given our license. We spent another five minutes installing the optional Motif graphical user interface (GUI) client.

Several books of documentation, which were written for experienced systems or network administrators, covered the various aspects of the firewall — including each of the GUI clients, installation, architecture and administration — and their remote connectivity product.

An irritating glitch in the documentation cropped up in an example command for extracting the archive from the distribution CD. Unfortunately, the example as shown was wrong. We applied a little Unix know-how and used the correct command, but it could have tripped up a less experienced administrator.

Checkpoint also supported a limited number of proxy services, including Telnet, FTP, HTTP, RLOGIN and the ability to create custom proxies. Authentication techniques supported include S/Key, SecurID, Operating system passwords, FireWall-1 passwords, RADIUS, and AssureNet Pathways Defender.

Other than using the company's Web-based system for acquiring our license keys, we didn't need to call Checkpoint for support.

GAUNTLET

Vendor: Trusted Information Systems
Location: Rockville, Md.
Web site: *www.tis.com*
PLATFORM
Hardware: Sun's Ultra 2
Operating system: Sun's Solaris 2.5.1
Price: $17,000 (250-plus users)

The use of Solaris' embedded software management tools shows a good focus on that market. And the inclusion of a browser-based firewall management tool makes Gauntlet flexible enough to merit serious consideration in any large Solaris shop.

Most elements of policy were easy to define and change, but problems rose when we tried to configure policy elements that were contrary to "good security." A specific problem showed up when we tried to allow unobstructed HTTP traffic from the "world" to more than one Web server. Gauntlet was fairly determined to push us toward using a proxy server for this access, despite repeated efforts.

Gauntlet also brings remote management with a Java-enabled Web browser. The firewall must be configured to allow each remote management machine to connect to a Web server running on the firewall. From a host on an external interface, remote management can be accomplished only by using the Gauntlet PC Extender to encrypt the traffic. PC Extender also can be used as an option from the internal interface side to avoid eavesdroppers on your LAN. Once connected, you must authenticate yourself and then you have almost complete control of the firewall configuration.

Our testing with ISS revealed only two minor risks in the targeted firewall test — the presence of Telnet banners and the availability of "finger" on the firewall host with account information being made available. And the shotgun test identified four additional vulnerabilities: rwho, SNMP, traceroute and a TCP predictability problem.

On the plus side, the installation uses Solaris' package features, which should make maintenance upgrades, software removal and the like more straightforward for a Solaris administrator. One small glitch occurred when a lengthy update with no prompts caused us to accidentally restart the installation. At 45 minutes, installation and initial configuration of this package wasn't unreasonable, but did take the longest of the software packages.

Separate documentation is included for Firewall Installation, Firewall Administration and the installation of a utility called the PC Extender Installation. As with the other packages, all the documentation is written for skilled administrators.

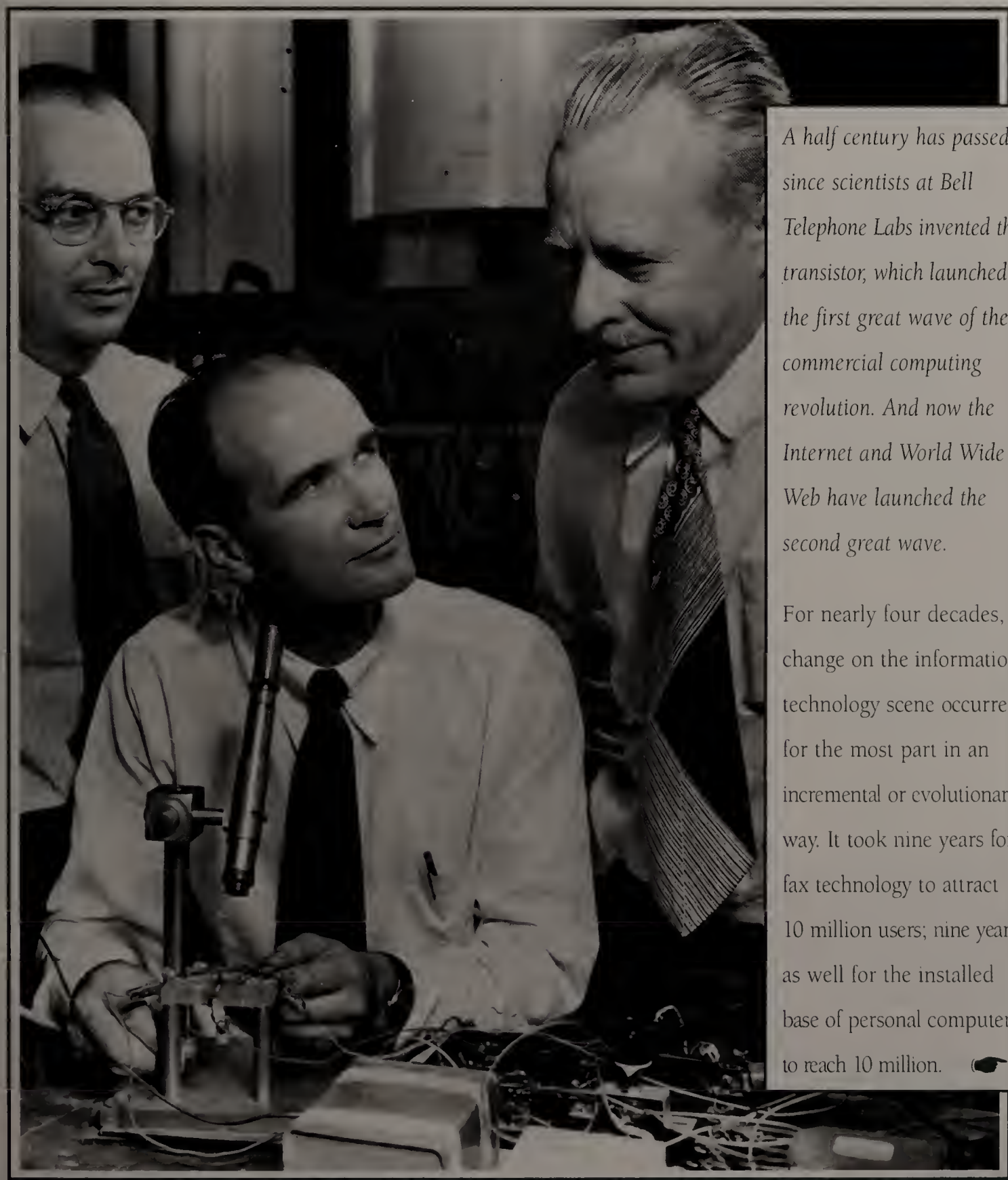
The documentation makes specific mention of most of the fundamental networking security concepts and as such should prompt some thought about what should be included in policy, but no specific recommendations are given.

Firewall events are logged using the standard system log command. The reporting features seemed somewhat limited. Although periodic reporting can be configured for several different frequencies and recipients can be notified by E-mail, all reports are E-mailed to the recipients. There didn't appear to be any of the more sophisticated notifications, such as pager.

Gauntlet provided the most impressive list of preconfigured proxy services, including FTP; multimedia, such as Microsoft's NetShow, Real Networks, Inc.'s RealPlayer, Zing Technology Corp.'s StreamWorks and

Reinventing Decision Support

SAS® Software and the World Wide Web



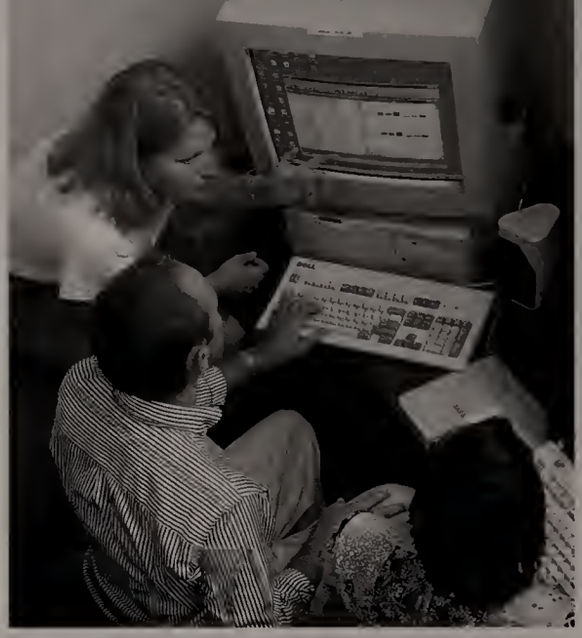
A half century has passed since scientists at Bell Telephone Labs invented the transistor, which launched the first great wave of the commercial computing revolution. And now the Internet and World Wide Web have launched the second great wave.

For nearly four decades, change on the information technology scene occurred for the most part in an incremental or evolutionary way. It took nine years for fax technology to attract 10 million users; nine years as well for the installed base of personal computers to reach 10 million. ☛

From SAS Institute Inc.

Then came the World Wide Web. In less than 24 months following its introduction, 10 million people were pointing and clicking their way through cyberspace. Today that number is more than 70 million worldwide and still growing 50% annually. In very short order, the Web has radically changed enterprise computing. By the end of 1998 more than half of corporate queries will be executed by Web browsers, according to the The Patricia Seybold Group, an industry consulting firm.

What's more, findings from market research firm International Data Corp. show that, among corporate users, the Web browser has emerged as the primary interface for all new application development work. And nearly 40% of the managers polled by IDC listed Web browsers as the primary interface for updating or enhancing previously developed applications. "This is the clearest statement yet of how central Internet technologies are becoming in the enterprise," says Frank Gens, IDC senior vice president of research.



SAS/IntrNet™ Software Unites the Ease of Point-and-Click with the Power of SAS Decision Support Tools

So just what is the driving force behind the enterprise-wide rush to Web-enable mission-critical applications? In a poll by *Computerworld* of its Premier 100 top Internet users, the number one reason for Web-enabling applications is cost savings.

Much of the cost savings are expected as a result of the Web deployment of applications to thin clients, whereby powerful servers from companies such as Sun Microsystems, Inc. distribute data and applications on demand to slimmed-down desktop devices. This thin client model uses the Internet and the Web as a universal data transport medium. The result is a far lower cost-per-desktop, with an increase in data access to just about anyone with a browser.

Yet although IT managers have been busily constructing Internet-based distributed computing networks, many of the hoped-for benefits have eluded them. That's because it has been difficult, if not impossible, to unite distributed network computing with data analysis and decision support.

Though there are many vendors whose products let users *query* data with Web browsers, what's been lacking is the critical capability to conduct Web-enabled analysis, exploitation and reporting of data. Until now.

SAS Institute, the company that in 1997 *Software Magazine* labeled the "Best Decision Support Tools Company," moved that much further ahead recently with the introduction of SAS/IntrNet software.

New Meaning for Web-Enabled Applications

Server-based SAS/IntrNet software makes SAS Institute the only vendor today providing all three classes of Web technology: Web publishing, dynamic data services and dynamic compute services. For Web publishing, there's an HTML output formatter for providing SAS output to HTML, as well as an HTML formatter and graphics drivers. Data services let you query enterprise data via the browser without having to run SAS software locally. And compute services make it easy to run a specific SAS program on demand through an Applications Dispatcher.

For on-line analytical processing (OLAP) users, SAS/IntrNet software includes an MDDB Report Viewer and Java Viewer that allow OLAP processing to take place via the Web browser.

Sun-SAS Team Helps National Semiconductor Stay in the Chips

National Semiconductor Corp. is determined to benefit from the global movement to network-centric computing...in more ways than one.

As a leading chip maker, National Semiconductor is at the vanguard of providing enabling technologies for high-speed, high-volume transfer across the Internet. The $2 billion company's chips are found in Internet access appliances such as PCs, workstations, personal digital assistants and cellular devices.

As a technology user itself, National Semiconductor is exploiting the benefits of Internet-based network computing and doing so with the help of a pair of technology allies: Sun Microsystems, Inc. and SAS Institute Inc.

As a long-time user of both Sun operating systems and hardware and of SAS decision support and analytical software, National Semiconductor in 1997 began something new. It started tapping into the power of SAS/IntrNet software to deliver real-time production data to its engineers moving SAS data and reports across the Internet.

The SAS/IntrNet ball got rolling at the company's Santa Clara, California based research and development site, which supports a half-dozen manufacturing and test sites on three continents. Engineers there analyze production data on Sun SPARCstation 20s running the Solaris 2.5.1 operating system, taking data feeds from the Sun Ultra Enterprise 1 server.

Easy Report Generation

Supporting National Semiconductor's Iot tracking application, which monitors standards for a manufacturing process, SAS/IntrNet software is helping engineers and developers sidestep what used to be a very labor-intensive process.

"An engineer used to gather all the information manually and then generate a report that got distributed just once per day–not in real-time," says Sam Hung, principal software engineer. Now SAS/IntrNet software lets engineers build reports on demand automatically using real-time data, Hung says. Access to that data is via the Web browser.

Lending a Transcontinental Hand

Across the country at National Semiconductor's South Portland, Maine, production site, Syloke Soong is laying plans to further Web-enable his SAS software tools, reports and analyses. As the site's senior software engineer, Soong needs to ensure that company production engineers have the most current production data available. He sees the Web browser emerging as the interface of choice.

Analysts and engineers at the South Portland site use a variety of hardware, including Sun Ultra Enterprise 1s as well as a pair of Ultra Enterprise 2s running Solaris 2.5.1.

"I was weaned on Sun; that's the same with lots of other people at this company," Soong says. "And when it comes to data analysis, SAS software is the industry standard."

National Semiconductor Corp.'s state-of-the-art manufacturing facility in South Portland, Maine.

The Warehouse Meets the Web

With SAS/IntrNet software, IT managers can deliver the SAS Data Warehouse—named in 1996, and again in 1997, the "Data Warehousing Product of the Year" by *Datamation* magazine—directly to the Web.

SAS/IntrNet software's Warehouse Viewer lets users access warehouse data directly through the Web browser, even without having SAS software installed on their clients. Available today on MVS, PC and UNIX® platforms, including the powerful line of servers from Sun Microsystems, SAS/IntrNet software enables sharing of data, reports and analyses not only with other SAS users but also with non-SAS users who are using a standard Web browser to access the data.

To ease warehouse navigation, Warehouse Viewer offers a choice of three interfaces: *Directory* lets users see and then select warehouse subjects and access data; *Search* lets users search information by name or description; and *Administration* lets administrators cruise through the structure of the warehouse, focusing on the metadata that defines it.

Making Your Web Browser a Universal Interface

SAS/IntrNet software cuts to the heart of the rapidly rising cost of desktop computing. This cost has skyrocketed in recent years as IS managers deployed hundreds of applications and tools to thousands of desktops—in addition to maintaining and updating those desktops on an annual basis.

"With SAS/IntrNet software, you build your SAS application once and then deliver it to all the clients right away," notes Chip Kelly, SAS Institute's program manager for Web enablement. "Then the end user just points and clicks with a very familiar interface, the Web browser. Our software reduces the interface requirement to any browser. It's that simple."

Sam Hung, long-time SAS software user and early adopter of SAS/IntrNet software, finds other timesaving and therefore cost-saving benefits. The principal software engineer at National Semiconductor Corp. notes that using SAS/IntrNet software, his applications and data can be deployed through the company's Sun servers with no CGI programming required. Using SAS/IntrNet software, researchers at National Semiconductor generate real-time Web graphics and reports to monitor the status of semiconductor production. They formerly relied on data that wasn't current.

The Web enabling of SAS applications through SAS/IntrNet software can also have direct benefits to your customers and partners as well as to internal users. Because of the universal access to SAS data through standard Web browsers, your suppliers—for example—can track your inventory levels and better anticipate restocking needs. And if your company is supplying materials to its customers, those customers can easily track shipments by accessing the same SAS-generated data via their Web browsers.

"What we've done is allowed for the distribution of SAS applications, data and reports to a very wide audience," notes Kelly. "We've made our back-end data analysis and exploitation tools available to everyone with Web access."

To learn more about SAS/IntrNet software, and to download free SAS Web Publishing Tools, visit SAS Institute at **www.sas.com/web**

SAS Institute Inc.

Sun Microsystems, Inc.

www.sas.com/web Phone 919-677-8200 Fax 919-677-4444 E-mail: cw@sas.com

SAS is a registered trademark of SAS Institute Inc. in the USA and other countries. Other brand and product names are registered trademarks or trademarks of their respective owners.
Copyright © 1997 SAS Institute Inc. Cary, NC. All rights reserved. 8082D 10 97

VDOnet Corp.'s VDOLive; SNMP, news and several others. It also has a facility for building custom proxies.

The authentication services include Access Key II, Cryptocard RB-I, Axent Technologies, Inc.'s Defender Security Server, Vasco Data Security, Inc.'s Digipass, Secure Computing's SafeWord Authentication Server, SecureNet Key, SecurID, S/Key and Reusable passwords (built-in).

Calls to Trusted Information's support line were returned within a few hours, and the sales and technical support personnel were consistently friendly and provided reliable answers quickly.

SIDEWINDER

Vendor: Secure Computing
Location: Roseville, Minn.
Web site: *www.securecomputing.com*
PLATFORM
Hardware: Compaq Prosignia
Operating system: BSDI Unix
Price: $25,000 ($20,000 for unlimited software license and $5,000 for hardware)

It took 20 minutes to unpack and set up the hardware (preloaded with BSDI Unix and the Sidewinder software), but Secure Computing won the software time-to-install competition with a time of zero minutes. Unfortunately, that 20 minutes was also the shortest time to failure. A hardware configuration problem prevented any testing.

Cisco's PIX is an example of a hardware-based firewall

The system we received was configured with two 10Base-T Ethernet cards. To participate in our load test and the ISS testing, we had to replace one 10Base-T card with a 10/100Base-T card, which also was included. As it turned out, the necessary drivers weren't included with the system and couldn't be delivered in time to be tested. Technical support personnel were friendly and helpful as possible considering the lack of tools available in the package we received. The attempt to swap the interfaces made the system unable to boot, and thus unable to be tested.

Although the Installation and Administration guides couldn't be verified against actual operation, the documentation was generally accurate and appropriate.

References to various standards were a better-than-average starting point for helping decide on security policy. Proxy services listed include America Online, FTP, Gopher, HTTP, POP, RealAudio, Telnet, Wide Area Information System, WHOIS, X.500, X Windows System and a custom proxy capability.

The list of authentication services include Standard password, LOCKout DES, LOCKout Fortezza, SafeWord, SecureNet Key and SecurID.

A LOOK AT A HARDWARE FIREWALL

We felt that Cisco's hardware-based firewall system, because of its popularity, deserved a comparative look while we were considering software firewalls.

PIX

Vendor: Cisco
Location: San Jose, Calif.
Web site: *www.cisco.com*
PLATFORM
Hardware: Proprietary hardware
Operating system: Cisco IOS
Price: $9,000 for 133-MHz unit tested

Simple, fast and resilient best summed up our experience with the PIX firewall. It comes preinstalled with most of its "smarts" in the hardware, making for a simple 10-minute installation process. Using a standard serial terminal, we only had to set internal and external Internet Protocol addresses and a remote configuration password, and enable remote configuration from a Windows NT server.

But the serial port also provided

Great walls, page 78

Personal firewalls, at your service

PC Secure 1.0
Software Builders International
Atlanta
www.netzip.com
(800) 432-0025; (770) 541-2729
$60, by download only

By Ross Greenberg

If you aren't protected by the corporate firewall — perhaps you work at home and telecommute or get online with your laptop as you travel — your machine and the data on it are at risk whenever you're connected.

You can minimize that risk with the help of a new firewall category know as personal firewalls, which let a user protect one machine or small workgroups connected to the Internet with only a modem between it and the bad guys.

Here's a look at one such product — Software Builders' PC Secure — to provide perspective on this category of protection.

My quick take? I liked the product. It tested very securely, and the price is low. The downside: The access warning box could be more visible. (The main review in this section focuses on Unix enterprise firewalls.)

HOW IT WORKS

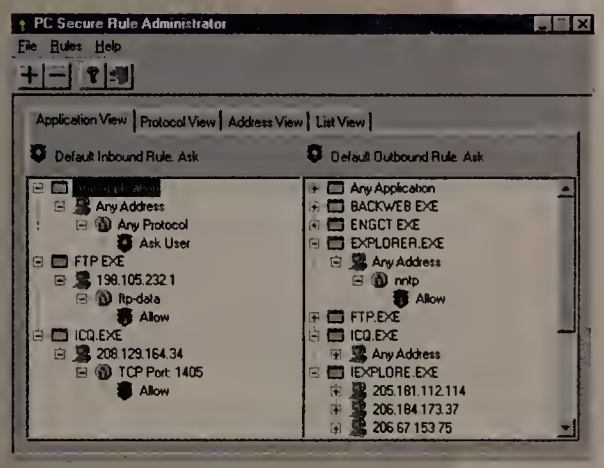
PC Secure's software connects at the lowest-level IP protocol there is, down at the WinSock2 level — there's no easy getting around where it hooks into from the inside, and there's no documented way around it from the outside.

Both inbound and outbound connection requests are checked against an easy-to-configure permissions table that defines access by application, source/target address and protocol type.

That lets users disallow FTP inbound requests from any address except your satellite office, for example, or prohibit browser connections to specific sites, such as game or pornography sites or perhaps your main competitor's upload site.

Systems administrators who use this product in a small workgroup setting also can password-protect a workstation at any time, locking in the current access privilege settings and even giving timed access when appropriate. The interface is simple, giving a view of your protection settings graphically, indexed by application or protocol. A simple list of your settings is available, too.

Each inbound or outbound connection can have one of three sta-



PC Secure is one of several firewall products for individual users and small workgroups

tuses: to allow, to deny or to query the user for permission. This status can be added to the permanent access database. That provides for incredible granularity of access.

A new version of the code is due in December. The vendor says that version will have a substantially improved interface chock-full of real-time status information.

Hopefully, the installation and uninstall routines will be among the areas fixed — I ended up with a trashed disk when uninstalling the software because I had installed other software first.

The only drawback in operation I saw was that when the access warning box pops up, it's hidden behind a full-screen application. That would be a welcome fix in the new version.□

Greenberg is a freelance reviewer in New Kingston, N.Y.

Great Walls of Fire

CONTINUED FROM PAGE 77

what our tester saw as a significant drawback. With the serial port on the back of the rack-mounted PIX, access could be difficult in the event of a serious system problem. A network crisis isn't the time to struggle with connecting a terminal to crucial equipment. Though the firewall is on Cisco's proprietary hardware, a management tool running on a Windows NT server on the same network as the PIX unit allows the rest of the setup to be done with any Java-enabled browser. All logging is done to the same NT server.

Defining a policy was quite easy with the Web-based management tools. Modifying a policy, however, was less straightforward. Although it was simple to add to a policy, it could be a significant problem to modify rules. In our experiments, modifying any part of the policy appeared to require removing all parts of the policy that depended on it. Our ISS tests found no vulnerabilities in the targeted firewall tests, and only the familiar SNMP and traceroute vulnerabilities in the "shotgun" test.

ISS

One of the challenges in selecting the firewall you use to secure information assets is to assure yourself that the system is in fact protection against real-world attacks. To achieve any sort of realism and consistency in such testing, automated testing tools are mandatory. We selected the ISS for this comparison. Used as a standard by many government agencies and professional security analysts, the ISS tool allows for repeated, high-speed testing of literally hundreds of well-known and obscure security vulnerabilities on firewall and host systems. We performed in minutes a serious analysis of firewall reliability, which would have been not just impractical but realistically impossible if attempted manually. □

Hayes is systems control manager at Client/Server Labs, a primary test lab partner of Computerworld. *He can be reached at ghayes@cslinc.com.*

Up to NCSA snuff

The National Computer Security Association has certified the following firewall products for 1997. For updates, visit NCSA's Web site at www.nsca.com.

3Com Corp.
Santa Clara, Calif.
www.3com.com
▸NETBuilder Router 9.1

Watchguard Security Management is targeted at branch offices and small companies

AltaVista Internet Software
(a subsidiary of Digital Equipment Corp.)
Littleton, Mass
http://altavista.software.digital.com
▸AltaVista (Unix platform)
▸AltaVista (NT platform)

ANS
(an America Online, Inc. company)
Reston, Va.
www.ans.net
▸ANS Interlock

Ascend Communications, Inc.
Alameda, Calif.
www.ascend.com
▸Pipeline Router, Version 4.6C

Checkpoint Software Technologies, Inc.
Redwood City, Calif.
www.checkpoint.com
▸Checkpoint FireWall-1
▸Checkpoint FireWall-1 NT

Cisco Systems, Inc.
San Jose, Calif.
www.cisco.com
▸PIX firewall
▸Centri firewall, Version 3.1

Cyberguard Corp.
Fort Lauderdale, Fla.
www.cyberguardcorp.com
▸CyberGuard Firewall, Version 2.2.3

Global Technology Associates, Inc.
Orlando, Fla.
www.gta.com
▸GFX Internet FirewallSystem, Version 2.5
▸GNAT Box 2.0.1

IBM
Atlanta
www.ibm.com/security/
▸Firewall, Version 3.1
▸Firewall for AS/400, Version 4, Release1

Internet Devices, Inc.
Sunnyvale, Calif.
www.internetdevices.com
▸AFS 2000, Version 2.02

Livermore Software Laboratories, International
Houston
www.lsli.com
▸Portus, Version 2

Milkyway Networks, Inc.
Santa Clara, Calif.
www.milkyway.com
▸Black Hole

NetGuard
(their link is broken on the NCSA page....)
▸Guardian 2.0

Network-1 Software & Technology, Inc.
New York
www.network-1.com
▸Firewall/Plus

ON Technology Corp.
Cambridge, Mass.
www.on.com
▸ON Guard

OpenROUTE Networks, Inc.
Westboro, Mass.
www.openroute.com
▸GT Secure 60
▸GT Secure 70

Radguard, Inc.
Mahwah, N.J.
www.radguard.com
▸PyroWall 1.1
▸CryptoWall 1.0

Raptor Systems, Inc.
Waltham, Mass
www.raptor.com
▸Eagle 4.0 (Solaris)
▸Eagle NT
▸Raptor Eagle; Enterprise Firewall 4.0 for HP-UX

Secure Computing Corp.
Roseville, Minn.
www.securecomputing.com
▸BorderWare V4.0
▸Sidewinder 3.0
▸Secure Computing Firewall for NT 2 Plus

Sun Microsystems, Inc.
Palo Alto, Calif.
www.incog.com
▸SunScreen SPF-100 1.0

Technologic, Inc.
Atlanta
www.tlogic.com
▸Interceptor

Trusted Information Systems
Glenwood, Md.
www.tis.com
▸Gauntlet Internet Firewall

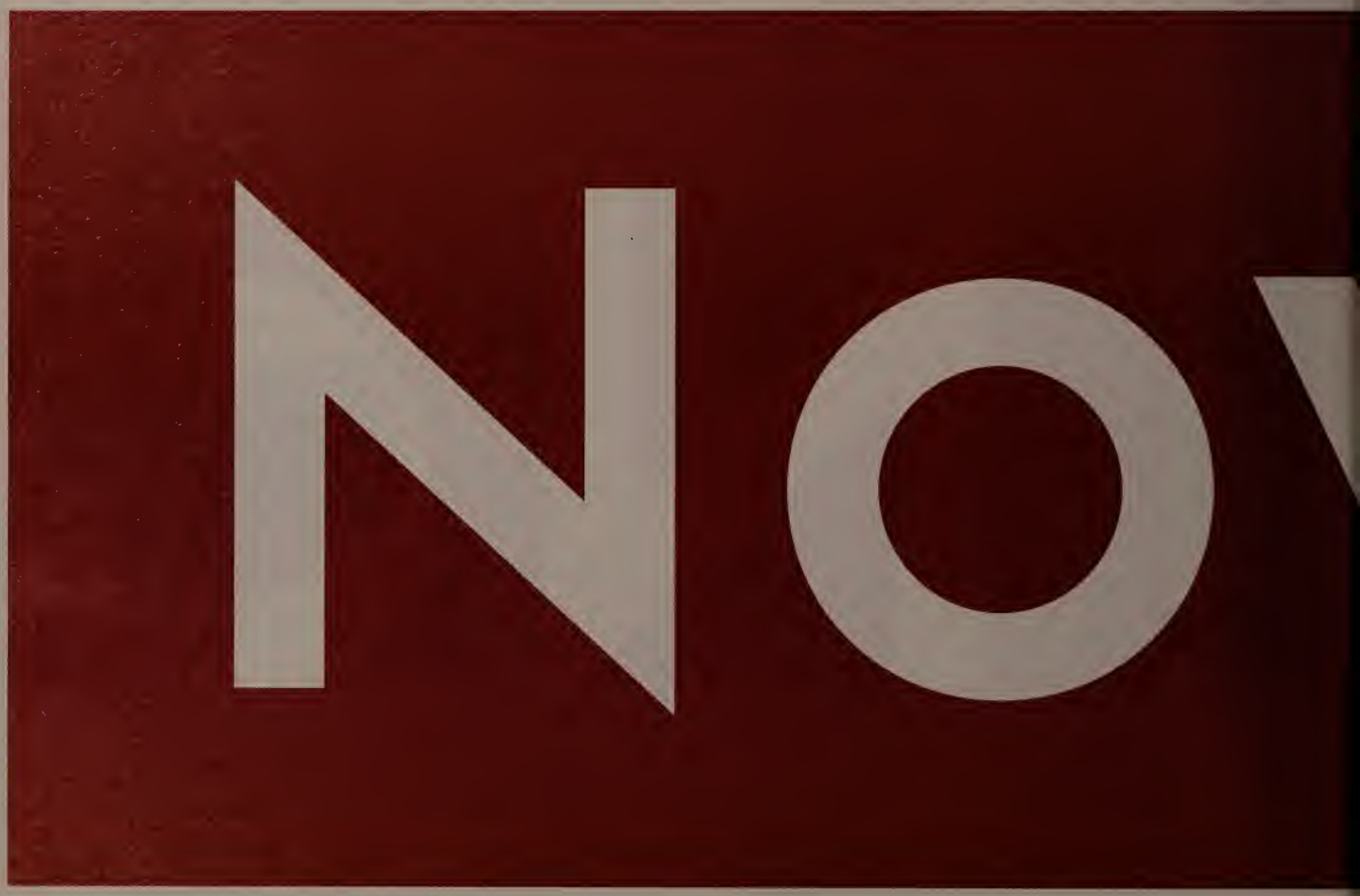
Ukiah Software, Inc.
Campbell, Calif.
www.ukiahsoft.com
▸NetRoad FireWALL

Watchguard Technologies, Inc.
Seattle
www.watchguard.com
▸Watchguard Security Management

NO

ONE KNOWS NETWORKS LIKE

OPEN systems. Open stondords. Open doors of interchonge onywhere in the world.
That is the promise of networking.
And thot is the promise Novell® is delivering.
Novell's innovative enabling technologies helped create the networking revolution of yesterdoy
and are now helping cotolyze the business revolution of tomorrow.
With millions of users oround the world, Novell server operoting systems truly power the network.
The latest version of IntranetWare™ software, for example, offers superior management and control of increosingly complex networks,
including the Internet and corporote intranets, delivering exceptionol value at a low cost of ownership.
IntranetWare is supported by Novell Directory Services™, the industry's leoding cross-plotform directory service,
providing single-source administrotion of oll parts of the computing environment,
including UNIX* ond NT servers, minis and mainframes.
NDS™ olso closely integrates with Novell BorderMonager™ technology, Novell's newest Internet product.



©1997 Novell, Inc. All rights reserved. Novell and GroupWise are registered trademarks, and Novell BorderManager, IntranetWare and Novell Directory Services (NDS) are trademarks of Novell, Inc in the United States and other countries. Java is a registered trademark of Sun Microsystems, Inc. in the United States and other countries. *UNIX is a registered trademark of X/Open Company, Ltd

Novell

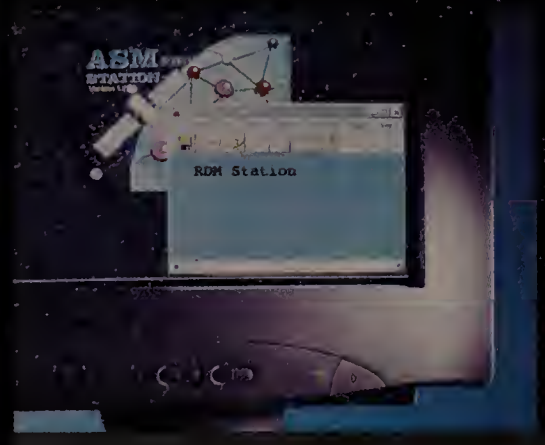
BorderManager is the industry's first integrated family of directory-based network services
that manages, secures and accelerates user access to information at every network border—
the point where any two networks meet.

NDS and BorderManager are object-oriented network services that can be integrated under Novell's Network Object Services for Java®.
This unique set of Java initiatives allows developers to fully build robust and scalable server-based solutions for the Internet
using open public API specifications for Java applications for global computing.

And GroupWise® 5.2 leverages the ubiquity of the Internet to deliver expanded e-mail capabilities
such as calendaring and scheduling, document management, workflow, imaging, threaded discussions and status tracking—
for any user with any browser on any server.

Networks will continue to get bigger, faster and more complex. But they're still just networks.
And no one knows networks like Novell.
We have the tools, the technology and the talent to make the networking future a practical reality today.
Internet, intranet, extranet—anynet—the name of the network is **Novell**.

Powerful dual Intel Pentium II processors. And, a suite of Acer management software eases network administration.



Envision a network ready,

remotely manageable,

dual Pentium II processor-based server that can diagnose each and every client. And tell you who's going to call in sick.

Acer introduces the award-winning AcerAltos 9100. Enterprise networks are growing. Virtual and mobile offices are commonplace. To gain a competitive edge, the need for anytime, anywhere access to corporate information is vital. The AcerAltos™ 9100, with dual Intel® Pentium® II processors, ensures network availability with tools like Acer Advanced Server Manager™ Pro and Remote Diagnostic Manager™. Resulting in higher productivity, connectivity, and uptime. The bottom line — a powerful server solution with manageability, expandability, compatibility, scalability, and network security. But, perhaps best of all, it'll keep your clients happy and healthy.

ACER®

1-800-558-ACER & select option 2, 1
www.acer.com/info/servers/

- Dual Intel 266MHz/512KB Pentium II processors, upgradeable to 300MHz
- 64MB RAM (expandable to 512MB)
- Dual redundant load sharing power supplies
- Dual onboard Adaptec® 7880 PCI UW SCSI
- Network ready (onboard PCI 10/100 Ethernet)
- 3-year limited warranty

intel inside
pentium II

©1997 Acer America Corporation. Acer and the Acer logo are registered trademarks, and AcerAltos, Acer Advanced Server Manager, and Acer Remote Diagnostic Manager are trademarks, of Acer America Corporation and Acer Inc. Adaptec is a trademark of Adaptec, Inc., which may be registered in some jurisdictions. Intel, the Intel Inside Logo, and Pentium are registered trademarks of Intel Corporation. Windows is a registered trademark of Microsoft Corporation. All other trademarks belong to their respective holders.

In Depth

Macro viruses. Boot-sector viruses. Clever boys who join the "elite" by wiping out your hard drive. And on deck, ActiveX. For the labs that battle destructive code, business is (unfortunately) booming. We invited ourselves to spend a few days with . . .

The VIRUS FIGHTERS

By Steve Ulfelder

The server is flat black. Perfect.

But it ought to be named Deathstar, or Blackhole, or maybe Pandora's Box. And it ought to be etched with cocky graffiti like a World War II bomb: *Rewrite THIS, punk! From LA with love.* Instead it's just labeled "AVLo," and like everything else in the lab, it's neat as a pin.

"A virus is a ghost in the machine."
– Alex Haddox, Symantec (right)

And it contains every virus the Symantec Anti-Virus Research Center (SARC) has ever captured.

Welcome to the front lines of the fight against computer viruses.

SARC and Network Associates, Inc.'s Anti-Virus Emergency Response Team, or AVERT, are two of the antivirus laboratories founded by vendors. (Network Associates was formed last month when McAfee Associates, Inc. merged with Network General Corp.) Part promotional tool, part public service, the laboratories find, fix and document malicious code. SARC and AVERT team members swear they would like nothing better than to put themselves out of business. But recent visits to both laboratories indicate that they needn't update their resumes any time soon.

As recently as two years ago, most viruses were created by an underground network of highly skilled show-offs. But those traditional viruses have largely been supplanted by macro viruses, written in Microsoft Corp.'s Visual-Basic — everyman's programming language opened the doors to everyman's virus.

There are plenty of bulletin boards with friendly interfaces where you can create a virus by dragging and dropping icons. Choose a payload. *Click.* Choose a delivery method. *Click.* Will that be polymorphous today, sir? *Click.* It's no wonder macro viruses now account for 80% of all viruses.

The ease of creation leads to more viruses than ever — more than 1,300 macro viruses exist today, up from 40 one year ago. That means vendors update their antivirus software more frequently, which means you need to make sure your users have the latest protection.

Businesses don't like to talk about viruses, but. . . .

A large East Coast financial institution thought it had been infected and shut down three floors of its offices. The institution was a Symantec Corp. client. Carey Nachenberg, a SARC engineer, got paged, hopped a red-eye and spent all day combing through 150 PCs by hand.

Nachenberg found nothing. The "virus" was a false alarm reported by company employees. The company lost at least $2.3 million. And that's a very conservative estimate, according to Symantec and other virus fighters who requested anonymity.

Most "viruses," like that financial institution's false alarm, aren't viruses at all. Alex Haddox, a Symantec product manager, says 60% of the reports SARC receives are false alarms. Many end users cry "Virus!" when they lose a file, when an application locks up or when their monitor flickers strangely.

Network Associates' new corporate offices are pure beige hulking Silicon Valley all the way, but AVERT itself has panache. To enter the locked-down lab, which operates on a $6 million-per-year budget, you need not only your company-issued badge, but a password also.

Inside, somebody took pains to establish a

The virus fighters, page 85

You have the right to remain calm.

51 issues for $39.95

Save over 73%

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❒ Home ❒ Business ❒ New ❒ Renew

Singie copy price: $3.00

*U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
- 10. Manufacturer (other than computer)
- 20. Finance/Insurance/Real Estate
- 30. Medical/Law/Education
- 40. Wholesale/Retail/Trade
- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/ Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
- 90. Computer/Peripheral Dealer/Dist./ Retailer
- 95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers
- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Intranet Products ❒ Yes ❒ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?

❒ Yes ❒ No

B4L7 R

51 issues for $39.95

Save over 73%

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ❒ Home ❒ Business ❒ New ❒ Renew

Singie copy price: $3.00

*U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.

Please complete the questions below.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/ Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
95. Other_____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT
19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, System Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Management
60. Sys. Integrators/VARs/Consulting Management

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. Vice President
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems
(a) Solaris (e) Mac OS
(b) NetWare (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTStep

App. Development Products ❒ Yes ❒ No
Networking Products ❒ Yes ❒ No
Intranet Products ❒ Yes ❒ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?

❒ Yes ❒ No

B4L7 R

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 55B MARION, OH

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD
P O BOX 2044
MARION OHIO 43306-4144

The VIRUS FIGHTERS

CONTINUED FROM PAGE 83

SARC's Los Angeles location makes it a favorite stop for TV location scouts, who usually go away disappointed.

War Room feeling. A backlit world map spotlights all AVERT locations. A series of clocks display the time in Santa Clara, Calif., Paris, Sao Paolo, Brazil, and Tokyo.

People wear white lab coats in this room. Unselfconsciously.

AVERT is in Santa Clara. Although Symantec's corporate home is next door in Cupertino, SARC (which is budgeted at $4 million per year) is 390 miles and a lifestyle or two south in Santa Monica.

It's tempting to draw a Silicon-Valley's-not-big-enough-for-the-both-of-us image from that distance, because to a disinterested observer, Network Associates and Symantec appear to hate each other's guts. Suits, countersuits and dueling press releases fly back and forth. It's not a collegial rivalry.

IN OTHER WORDS

While waiting for an elevator, Symantec engineers search for a polite way to explain certain virus "payloads" — the messages and images that appear to inform users they've been hit. Payloads may be patriotic (flags from Italy and Eastern European nations are common), menacing (skull-and-crossbones stuff) or amusing (there's a virus called Cussout that swears like a stevedore at the bewildered victim).

Very often, though, payloads are . . . how to put it . . . "phallo-centric," the SARC engineers finally blush. Virus writers, it turns out, have dirty minds.

Virus writers tend to be 14- to 24-year-old males who seek nothing more than to become elite virus writers. Henri Delger, moderator for Prodigy's Virus Help community, says, "For the immature, the challenge is the big thing. 'Can it be done?' becomes 'I'm gonna try that!' and, if successful, 'Wow! I did it!' "

"Sometimes they actually embed chatty messages to each other within a virus," Haddox says. "They know the message will be read by their buddies." He recalls virus code in which the writers discussed girlfriend problems ("Let her go, man, she's not worth it").

You become a star in the virus underground by writing clever viruses that are widely propagated. You write them, save them, trade them with your friends. That's about all there is to it.

AVERT and SARC have developed a pretty sophisticated profile of their quarry, but does that cloak-and-dagger stuff help fix viruses? Nope. "Code's code," Haddox says.

Network Associates' Shannon Peters Talbott

FUTURE TENSE

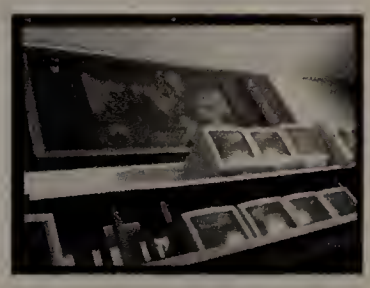
The vendor-sponsored laboratories aren't universally beloved. Several antivirus information systems workers contacted via electronic mail for this story question the labs' impartiality. One IS worker at a large company, who requested anonymity, says he found Network Associates "very sloppy" with samples and communication. And Delger, when asked about SARC and AVERT virus predictions, says, "Hogwash . . . you're listening to their marketing people."

Those slings and arrows don't surprise virus fighters, who often are accused of writing malicious code themselves to drum up business. "That hurts," Haddox says.

Public opinion aside, the job of antivirus laboratories won't get easier any time soon. It's not hard to write a macro virus. E-mail has emerged as the virus delivery vehicle of choice, accelerating the spread of malicious code [CW, Sept. 29].

And Microsoft's ActiveX is seen by some as the next virus frontier. ActiveX viruses, or "destructive applets," can raise havoc on a desktop.

Inside AVERT. Network Associates took pains to establish a War Room atmosphere. Clocks remind employees that somewhere, someone is always creating a virus.



DAY IN THE LIFE

Shannon Peters Talbott, Network Associates' manager of advanced research, has 15 people in Santa Clara and 70 others around the world working for her.

On this typical morning, Talbott confers as an AVERT coordinator looks over new submissions and does an initial scan to weed out the obvious nonviruses. She then routes the true viruses to specialists — in polymorphous or boot-sector viruses, for example.

The specialists identify the virus, name and categorize it if it's a new strain, and create a fix. Surprisingly, that's usually the easy part of the job. Most newly discovered viruses are slight variations on known ones, so unless a virus is polymorphic (which means it changes form and is thus devilishly tricky to lasso), the repair work often takes just minutes.

Testing, then, becomes the bottleneck. Each fix must be tested on various hardware and software setups. That can take four to eight hours.

Still, both SARC and AVERT turn around most nonpolymorphic virus reports in 24 hours.

When asked what it takes to be a good virus-hunter, Talbott says, "They need an assembly language background. It helps if they've done low-level bug testing." She smiles. "And they need to work fast." □

Ulfelder is senior editor of Computerworld*'s In Depth section. His Internet address is steve_ulfelder@cw.com.*

To develop and grow, you need exposure to all the right elements

98
CORPORATE
TECHNICAL
RECRUITING
CONFERENCE
COMPUTERWORLD

ORLANDO
FLORIDA

May 17-20, 1998
Marriott's Orlando
World Center Resort
1-800-488-9204

These positions & more are waiting for you

data analyst • NT consultant • technical specialist • project leader • NT specialist • programmer analyst • MS certified trainer • project manager - year 2000 • database administrator • unix systems administrator • data analyst • NT consultant • technical specialist • project leader • NT specialist • programmer analyst • MS certified trainer • project manager - year 2000 • database administrator • unix systems administrator • data analyst • NT consultant • technical specialist • project leader • NT specialist • programmer analyst • MS certified trainer • project manager - year 2000 • database administrator • unix systems administrator • data analyst • NT consultant • technical specialist • project leader • NT specialist • programmer analyst • MS certified trainer • project manager - year 2000 • database administrator • unix systems administrator • data analyst • NT consultant • technical specialist • project leader • NT specialist • programmer analyst • MS certified trainer • project manager - year 2000 • database administrator • unix systems administrator • data analyst • NT consultant • technical specialist • project leader • NT specialist • programmer analyst • MS certified trainer • project manager - year 2000 • database administrator • unix systems administrator • data analyst

http://careers.computerworld.com

IT Careers

The new face of DIVERSITY

More minorities are seeking opportunities in the IS field. But the lack of mentors and role models is still holding many back

By Melanie Menagh

MARC BERLOW

Detroit Edison's Jacqueline Benson says many IS organizations don't practice the diversity goals they preach

"DIVERSITY IS GOOD BUSINESS." "WE WANT A VARIETY OF PERSPECTIVES AT THE TABLE." "WE DON'T LOOK AT ETHNICITY, WE LOOK AT SKILLS."

To hear companies talk, the 1990s are a golden age for minorities in information systems. Firms crow about their cultural awareness seminars, sensitivity training programs and minority recruiting policies.

It only makes sense: Desperate for competent staff, the hot issue at IS shops is seeking out new pipelines for personnel.

In theory, if you've got the right skills set, you get the job, regardless of your racial or cultural admixture. That's the theory. But what about the reality?

Just because there's a scarcity of good people, has that changed entrenched attitudes about ethnic groups traditionally underrepresented in IS? Do companies whose diversity policies look good on paper follow through with equitable salaries and opportunities? These days, what can an African-American man or an Hispanic woman do to improve his or her career trajectory?

NEEDED URGENTLY: MENTORS AND ROLE MODELS

Despite the best intentions of many companies and managers, diversity goals aren't always borne out in the real-life work experiences of minority IS staffers, according to Jacqueline Benson, IS director of administration at Detroit Edison.

"There is a trust gap, a respect gap, a personality gap," Benson says. "People not coming from the minority experience sometimes don't have the same perspective. They think it's just a matter of doing good work; they don't see some of the additional problems that their [nonwhite] coworkers have." And, she says, "I do believe there is a glass ceiling."

She isn't alone in her feelings. "On paper, everyone loves you," says an African-American senior manager at an IS consulting firm in the Dallas/Fort Worth area, who preferred not to be identified by name. "On paper, it looks like this [company] is home; you get there, and it's not," the manager says. "The issue is whether the diversity policies are implemented all the way down the line. Does the company follow through? Do those in decision-making positions make sure policies are enforced? I've had good experiences and bad experiences."

Part of the problem: "Corporations all have good policies. Many have extensive diversity programs, but if there's a lack of enforcement of

those principles, the effort is wasted," says the anonymous IS manager. "Often, it's not deliberate, but some companies just don't follow through."

Another problem is a lack of minority peers, role models and mentors in IS. "In most cases, there are no more than four or five people of color in an IS department of several hundred," says the manager from Texas. "And although some companies may report a high minority rate, many are not talking about blacks; it might be people from India, for instance." He says the black community is especially underrepresented in information technology, at the higher levels.

"It's difficult to find mentors who can help minorities coming up. It's a strong disadvantage," Benson says. "In the last five years, my CIO, who is white, became my mentor. It's been a tremendous boost; my career has really taken off. He's been able to steer me into what I want to do and show me what he thinks I should be doing."

PERFORMANCE ANXIETY

Some of the difficulties minority IS professionals experience come from internal factors. "Confidence is an enormous problem," says Byron Gutierrez, a member of the senior technical staff at Oracle Corp.'s Tools Division in Redwood Shores, Calif. He has tutored gang members in San Diego and East Los Angeles.

"The most important thing was giving them confidence, letting them know that they could work with computers," Gutierrez says. "For so long, they'd been told they couldn't do that. When they realize they can succeed in IS, then they push. In fact, once they get there, they overperform because they still feel they're not up to the position."

It's a problem not limited to Hispanic IS staffers.

"When you're one of the few black people on staff, your visibility is exceedingly high, so your mistakes are immediately known, but your successes may or may not be," says the manager from Texas. "Being in the spotlight all the time can cause you to go to extremes to make sure you're extremely technically competent."

NO LONGER SUCH MINORITIES

"No doubt about it, the numbers of African-Americans in IS are increasing. Companies are salivating after our students," says Harold Gray, senior director of the Center for Professional Development at Howard University's School of Business, a historically African-American institution in Washington.

At Howard, graduates with a technology focus have become very hot commodities indeed. "Out of our senior class, 90% are getting job offers from companies like IBM, Microsoft, AT&T, Kraft Foods, EDS — the list goes on," Gray says.

Howard alums are getting impressive salaries to boot: Undergrads are looking at the high $30s, with $2,000 signing bonuses; those with MBAs are pulling down offers of $70,000, plus $16,000 signing bonuses and scholarship bucks to finish their degrees.

"The technical world is certainly changing, sucking up talent because of demand and rewards. Our IS department is extremely diverse," says Jorge Figuredo, senior vice president of human resources at Liz Claiborne, Inc. in New York. "There is a common language in IS. The democratic nature of technology provides an equalization among people of different backgrounds."

HOLDING ON TO YOUR ASSETS

Companies are scrambling to keep their minority IS staffers happy and on the payroll. "Retaining people has become absolutely critical. It's an issue of creativity and innovation," says Je Anna McCardie, diversity initiative manager at Silicon Graphics, Inc. (SGI) in Mountain View, Calif. "We don't put people in boxes according to their background. You can be as creative as possible [only] when you are allowed to be an individual."

SGI has introduced many programs to encourage minority participation. For example, it has affinity groups, such as Visionarios, whose members organize the fiesta for Hispanic Heritage Month, arrange for speakers and work on recruiting Latino college grads.

"Retaining a diverse workforce is a really big issue," Figuredo says. "Anyone who has the skills can always find someone who's going to offer a little more money or have a faster shop. But you also have to consider who you want to be and how you want to work. We try to provide an environment that says, 'You're important. We want you. We understand you. We're looking for ways to leverage your intellectual capital.'

"People have to feel that they're welcome, that they have a future, that they're not going to hit a glass ceiling or a brick wall," Figuredo says.

OPPORTUNITY UNBOUND

Despite the extra obstacles, many members of minority groups have found the future in IS.

"The sky's the limit. The culture, the environment don't inhibit people. If you have a goal and the ability, it's possible. Accomplishing it is your own responsibility," says Julie Yancey, managing director of development services at Federal Express Corp. in Memphis.

Yvette Reynolds, IT manager at Supply Commerce at Dell Computer Corp. in Austin, Texas, says her Hispanic background doesn't hold her back. "It started out being an all-white-male field, but the industry has matured. They're more receptive to having minorities on staff. If you perform well in this industry, it's a fair shake; wage gaps don't exist here," she says.

Reynolds tries to bring a special sensitivity to the table. "When you're interviewing, you become intent on bridging the gap of cultural difference. You try a little bit harder to understand where the person is coming from, what their frame of reference might be," she says.

As part of the diversity program at Dell, each new hire has a sponsor, Reynolds says. "For minority members, the sponsor helps them adjust to the environment. If they're from another culture, they take extra care, slow down to make that person feel comfortable, and give them the tools they need to feel like they're a part of something they're building," she says. .

SIZING UP A POTENTIAL EMPLOYER

For minority members in IS, it's especially crucial to look carefully at prospective employers, not just the bottom line. Problems exist, but those who pick the right shop will find doors swinging open.

"I interned at Ford and had a very good social experience as well as work experience," says Cynthia Gumbs, a systems analyst at Ford Motor Credit Co. in Dearborn, Mich., and a recent Howard graduate. "Money definitely is not the driving force in which company to choose. Look at your opportunities to grow."

Gumbs says the company's nontechnology programs are an important part of the total package.

"I have a partner, an African-American woman that I'm paired with. So if I have a problem I don't want to discuss with my boss, I have lunch with her. They made me feel at home here, as opposed to going someplace and being the only black face in the group."

Gutierrez counsels people to be more aggressive about managing their careers. "Members of minorities don't move around as much as the industry average," he says. "Some of it has to do with security. Even when they are seriously underpaid, they don't shop around. They don't want to risk change when they're doing better than they thought they would."

"You may be discriminated against, but you have to learn to live with it," says the manager from Texas. "You still fare better in IS than anywhere." His advice? "Become a mentor. It teaches you as much as it teaches them. It helps you focus your career and understand what you have done, where you have been successful or not and why." □

Menagh is a freelance writer in Maple Corner, Vt.

WHO'S SEEKING COMPUTER SCIENCE DEGREES

	All bachelor's degrees awarded	Bachelor's degrees in computer science	Percentage who choose computer science
White	947,309	20,503	2.2%
Asian	51,463	3,592	7.0%
Black	77,872	2,773	3.6%
Hispanic	45,376	1,311	2.9%
Native American	5,671	97	1.7%

Source: U.S. Bureau of Labor Statistics, 1996

THE GROWING RANKS OF IS AND PERCENTAGE OF IS MINORITIES

	TOTAL EMPLOYED			PERCENTAGE BLACK			PERCENTAGE HISPANIC		
Job Title	1984	1996	% change	1984	1996	% change	1984	1996	% change
COMPUTER SYSTEMS ANALYSTS	310,000	1,093,00	+353%	5.3	7.2	+36%	1.8	2.5	+39%
COMPUTER LEAD OPERATORS	140,000	209,000	+49%	5.3	8.0	+51%	3.3	3.4	+3%
COMPUTER PROGRAMMERS	507,000	561,000	+11%	5.3	5.3	no change	2.7	4.7	+74%
COMPUTER OPERATORS	713,000	398,000	-55%	12.7	13.3	+5%	6.1	7.9	+30%

Source: U.S. Bureau of Labor Statistics, 1996

Integrated Systems Professionals
A Fast-Growing National Consultancy Offers Exciting Opportunities For Top Quality Professionals.

Project Managers
Team Leaders/Consultants
- Long-Term Career Opportunities
- Short-Term And Long-Term Contract Opportunities

Experience in all SAP R/3 Modules Basis and ABAP
Oracle • PeopleSoft • Baan

Performance-Based Compensation provides exciting opportunities for experienced professionals. (To $250K OR $150 per hour for experienced SAP experts)

Please fax resumes to 516-625-0740 or visit us at http://www. iprr.com
IPR INC.

FIVE OPENINGS FOR Systems Analyst (SPDC) - Research, design, develop and support computer software systems in UNIX environment using C++ and any object oriented database systems such as Gemstone or ObjectStore, in conjunction with semiconductor hardware product development. Define the appropriate computing systems configuration in semiconductor device design and process definition. Identify the applications needed by the research staff to engineer device structures, build finished wafers, status material progress, collect measurement data, and conduct analysis of experiment results. Consult with hardware engineers and other engineering staff to evaluate interface between hardware and software, and operational and performance requirements of overall system. Formulate and design software system. Integrate and test the applications with other departments and/or external customers when requested. Requires a Bachelor's degree in Computer Science or Mathematics and three years experience in job offered or three years directly related design and development of software systems in UNIX environment using C++ and any object oriented database system. Or will consider a Master's degree in Computer Science or Mathematics and one year experience in directly related design and development of software systems in UNIX environment using C++ and any object oriented database system in lieu of Bachelor's degree and three years experience. 40 hours per week, $52,800 per year. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.#TX7858156. Ad paid by an Equal Opportunity Employer.

Software engineer with 3 years of experience as a s/w engineer or computer protessional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 3 years of experience using UNIX, PL/SOL and ORACLE, one year of experience with Oracle Forms and Oracle Reports and some experience with Oracle Manutacturing and Distribution applications. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. $72,000/yr 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 1014684, to: Mr. Tom Dembosky, Manager, Office of Employment Security, 350 N. Fourth St., Indiana, PA 15701.

SOFTWARE ENGINEER required Analysis, desigr. & programming of applications software using C++ on Windows & UNIX platforms Provide database administration & user training Masters degree required in Math, Computers or Engineering plus 1 yeai experience in the job duties described above. Must be willing to relocate to various unanticipated work sites throughout the USA every 4 to 10 months Employer will pay for necessary travel between assignments Must have proof ot legal authority to work in the US. Salary-$45,600.00/year for a 40 hour work week Apply at the Texas Workforce Commission, Dallas, Texas or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701 J.O. #TX0240848 Ad paid by an Equal Opportunity Employer

---

Programmer Analyst - (5 openings) (J.O.N. # GA6159771] Software development, including all phases of the software development cycle; i.e. analysis, design, coding and testing of application software; using IBM platforms and software development tools, including but not limited to, CICS, COBOL, and DB2. Reqs. 2 years exp. in the job offered. Reqs. Bach. in Comp. Sci., Sys. Anal., Info. Tech., Comp. Info. Tech., Comp. Info. Sys., Mgmt. Into. Sys., Comp., Electrical or Electronic Engg., Comp. Sci. and Engg., Comp. Sci. Engg., or Mathematics, or its equivalent in edu. and exp. Will accept 3 years of college educ. plus 3 years exp. in the job offered or in a related occupation in lieu of the required edu. $45,000/yr., 40hr/wk., 8a-5p, M-F. Apply in person or send two resumes with the J.O.N. # to: Georgia Department of Labor, Job Order # GA 6159771, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office. Must have proof of legal authority to work in the U.S.

DATABASE EXPERTS
Relocating or desire more challenge?
Our focus is D.B. Technology
We list outstanding, permanent positions across the U.S.A. Relo & Fees Paid

Sr. DB Expert to $90k+bonus
Dynamic, multi-natl corp
Will lead corp database planning
Requires exp. in multiple RDBMS

DBA/Tech Support to $80k
Strong performance tuning
Will support large databases

S/W Development to $80+stock
C/C++/database development
skills for hi tech software vendors

DB Specialists $60 - 120+
Host of opportunities for database & C/S project mgr's/developers
Large & small companies, many industries

HAMILTON TECHNICAL PERSONNEL, INC
P O Box369 WestHurley,NY 12491
914-679-4050 Fax: 914-679-5704
cwad@hamiltontech.com
http/:www.hamiltontech.com

Data Software Research Company

offers

Oracle Financials Training in India

CONTACT:
www.dsrc.com

NEW OPPORTUNITIES
$110,000 - $180,000
Consulting organization of major computer company is seeking BASIS Consultants with 1+ years experience. Contract or permanent positions. Company will invest over $50K in advanced R/3 training. Up to $25K hiring bonus. Openings in major U.S. cities and Europe.

$110 - $180,000 compensation
Contract or Permanent
FAX RESUME TO:
Technology Group
1-800-818-0824
sapjobs@tec-group.com

DCI's Database & Client/Server World
December 9-11, 1997
Navy Pier
Chicago, IL

The World's #1 Software Event is back in Chicago!

ATTENTION EXHIBITORS
Prime Booth Locations are SELLING OUT!

Over 100 Conference Sessions
Expert Instructors Tell IT All, from DBMS to Software Development Automation, from Intranets and ECommerce to NCs, PCs and Network Computing

Powerhouse Keynotes
Robert Finocchio, *Informix*
John Swainson, *IBM*
Grady Booch, *Rational*
Chris Date, *Consultant*
Kim Polese, *Marimba*
James Utzschneider, *Microsoft*

Hundreds of Exhibits
See All the Latest Tools and Technologies to Take Your Enterprise to the Next Level!

Sponsored by
DCI

Co-Sponsored by
Computer Associates International
Computing News & Review
Computron Software
Data Management Review
Datamation
Hyperion Software
IBM
Lawson Software
Oracle Magazine
Passport Corporation
Popkin Software & Systems, Inc.
PowerCerv Technologies Corp.
SOFTWARE Magazine
SQL Forum Press
Sybase, Inc.
Tandem Computers

See the Full Conference Brochure and Register for Your FREE Expo Pass Online at www.DCI.com/Database/

Register Online - Secure Site
www.DCI.com/Database/
Conference HOTLINE
978-470-3880
ULEWC00

SAP

WORLDWIDE IMPLEMENTATIONS

ALL MODULES

FUNCTIONAL
CONFIGURATION
ABAP
BASIS

POSITIONS THROUGHOUT THE U.S. AND ABROAD

1975 North Park Place
Atlanta, GA 30339
800-599-9550
770-955-1714
FAX: 770-937-0423
e-mail: slc11@aol.com
EOE, MEMBER NACCB

STRUCTURED LOGIC COMPANY, INC.
SAP NATIONAL Implementation Division

SAP PROFESSIONALS

Fast-growing national and international consultancy with a reputation for first class consultants offers WORLD-WIDE CAREER OPPORTUNITIES FOR TOP-QUALITY PROFESSIONALS.

CURRENTLY STAFFING PROJECTS IN:

US, Canada, South America, Pacific Rim, and Europe: especially in these skills and industries: FI/CO, Basis, ABAP/4, PM, MM, WM, PP, SD, EDI in SAP Environment, Supply Chain/Manufacturing, Utilities in an SAP Environment, and SAP Retail.

Sales: U S based positions available in both national international sales for experienced professionals.

Recruiting: Positions available in our New York City area offices for experienced technical recruiters.

Competitive compensation with performance incentives; comprehensive benefits package.

- *Experienced project managers $180K+*
- *Team leaders $150K+*
- *Consultants*

spearhead™

SPEARHEAD SYSTEM CONSULTANTS (US) LTD.
SAP National Implementation Partner

99 Seaview Blvd., Suite 340
Port Washington NY 11050
voice 516.625.9000 fax 516.625.9687

55 Broad Street
New York Information Technology Center
New York, NY 10004
voice 212.968.1346/1348 fax 212.968.1352
recruits@spearhead.com
1.888.spearhead
www.spearhead.com

Send resume to the Attention of Resource Manager.
SAP is a Registered Trademark of SAP AG.

SEVCOR International, Inc.®

Information System Professionals

North America
SAP 1+ yrs. R/3 exp. v. 3.0 and up
Baan 8+mos. Exp v. 3.1A, B, or higher

International
SAP 3+ yrs. R/3 exp. V.3.0 and up
BAAN 8+ mos. exp. v. 3.1A, B, or higher

Chicago
Programmer Analysts
1+ yrs. IBM Mainframe COBOL, CICS, DB2
Software Engineers
1+ yrs. MFC, VC++, OOA/OOD
Systems Consultants
1+ yrs., C++, PowerBuilder, JAVA, UNIX, HTML, INFORMIX

For immediate consideration ask for Lukas or Tony at 888 7-SEVCOR
Or fax your resume to 630 250-3089

RETINGER
sm Partners for Recruitment Results sm

sevcor@sevcor-int.com

Pacific Northwest

COMSYS Information technology services

COMSYS is a leader in the national IT market with over 4,000 consultants nationwide. Our strong ethics have led the Portland branch to 10 years of strong local market leadership & local success measured in double digits.

COMSYS Portland is staffing for Year 2000 projects, all headquartered in the Y2K facility in downtown Portland.

COMSYS offers a competitive compensation & benefits package. For immediate consideration, mail, fax or e-mail your resume to:

COMSYS Information Technology Services
10300 SW Greenburg Road, Suite 230,
Dept C, Portland, OR 97223,
Fax: (503) 293-3898. Tel: (503) 293-2499,
Toll free: (888) 882-8326
Seattle Fax (425) 453-7174;
Tel: (888) 826-6797,
E-mail: jpatterson@comsysinc.com
Web: http://www.comsysinc.com
Equal Opportunity Employer

Year 2000

- COBOL, CICS
- IMS DB/DC
- Assembler
- IEF/Composer
- Natural/ADABAS
- IDMS, ADS/O

Business Alliance Programme™

More Assignments:
- IEF/Composer
- IMS DB/DC
- DB2, CICS
- Oracle

SOFTWARE ENGINEER required. Design, model, program & implement client/server applications on Windows NT & UNIX platforms & perform functions of systems administrator. Master's degree required in Math, Computers, Engineering or other related program plus one year of experience in the job duties described above. Employer will accept a Bachelor's degree with 3 years of experience in place of the Masters and 1 year previously mentioned. Must have proof of legal authority to work in the U.S. Salary: $42,000/year for a 40 hour work week. Interested applicants contact Oklahoma State Employment Service, 11654-A East 21st St., Tulsa, OK 74129, (I.D. #7209). Phone number (918) 437-4473. Refer to Job Order #287511. Ad paid by an Equal Opportunity Employer.

SOFTWARE ENGINEER required.Programming & Administration of UNIX/SYBASE servers using C++ & object oriented design methods. Master's required in Computers, Engineering or related field of study, plus 1 year experience in the job duties described above. Must be willing to relocate to various unanticipated work sites throughout USA every 4 to 10 months. Employer will pay for necessary travel from assignment to assignment. Must have proof of legal authority to work in the U.S. Salary: $55,000/year for a 40 hour work week. Interested applicants contact the Oklahoma Employment Service, 110 S. Hartford, Suite 106, Tulsa, OK 74120 (I.D. #7207). Phone # (918) 592-2111. Refer to Job Order #292112. Ad paid by an Equal Opportunity Employer.

Software Engineer (full-time) -- Design, develop and test software modules using object-oriented software development methodologies utilizing C, C++, on HPUX, also utilizing 'xdb' debugger and relational database ORACLE Forms 3.0, PLSQL, SQL Menus, SQL reports. Req. BS in CS or related field plus minimum of 1 yr's exp. in the job offered. Resume to: Human Resources, 6050 Peachtree Pkwy, Suite 240-241, Norcross, GA 30092.

Software engineer with 3 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 3 years of experience using UNIX, C and ORACLE. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in one of several limited fields: engineering, mathematics, computer science or physics. $65,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 8029402, to: Mr. Clement Puzzutelli, Manager, Office of Employment Security, 1051 Morell-Box 868, Connellsville, PA 15425.

Software Engineer (IBM Mainframe): Structured systems analysis, design, development, testing, quality assurance, implementation, integration, maintenance, support & conversion of large volume online transaction processing & batch application systems in a multi-h'dware/multi-s'ware environ. over centralized database systems using relational/hierarchical/network database mgmt systems, Third Generation Languages (3GLs), Fourth Generation Languages (4GLs), CASE tools & Transaction Processing Software. Reqs: B.S. in Comp. Sci., Engr'g or Scl. (or equlv.) & 2 yrs exp in job offered or as Programmer Analyst/Systems Analyst. Must have appropriate combination of skills as follows: 1 of A & 1 of B & 1 of C; or 1 of A & 2 of B; or 1 of A & 2 of C: A Includes DBMS: DB2, IMS DB, IDMS DB; B Includes Tools: CICS, IMS DC, IDMS DC, ADS/O, QMF, VSAM, MF-Workbench; C Includes Languages/CASE tools: TELON, IEF, ADW, CSP, APS. High mobility preferred. (Multiple positions) 40 hrs/wk; $49,000 - $60,000/yr; Report/Submit resume to PA Job Ctr, Ms. Joanne Lang, Mgr., Office of Employment Security, 320 Bilmar Dr., Pittsburgh, PA 15401. JO #8029329.

Senior Software Design Engineer: Design, implement and test software peripherals for a digital telecommunications switch using object-oriented methodologies, including Rumbaugh and Jacobsen. Develop peripheral software using C++ in a UNIX environment and software tools including Paradigm Plus, Object Center and the MRI toolset. Develop design documentation using OMTool and Framebuilder and manage documentation using ClearCase versioning tool. Participate in peer design reviews to enforce sound object-oriented development practices, identify and develop reusable software components and assist in continuous process and product improvement. Requirements: Bachelor's degree in Computer Science or Computer Engineering and two years of experience in the position offered or two years experience as a Object-Oriented Software Designer which must include experience in designing, developing, software using object-oriented analysis and design methodologies including Jacobsen and Rumbaugh and coding in Smalltalk or C++. A Master's degree in Computer Science or Computer Engineering with specific course work in object-oriented programming may be substituted for two years of experience. M-F, 9:00-5:00, $52,600.00/year. Apply at the nearest Job Service office, or submit resume with Social Security number to the Job Service, 1105 Briggs Avenue, Durham, NC 27703, J.O.# NC3071430 and DOT code 030.062-010. Ad paid by an equal opportunity employer.

DATA PROCESSING

Contract & Permanent Jobs:
- Database Administrator
- IMS DB/DC
- UNIX SysAdmin/Novell/NT
- UNIX C/C++
- Visual Basic/Access/Java
- Sybase/Oracle/Informix
- Lotus Notes/Progress
- COBOL/CICS/DB2
- Visual C++/SQL Server
- Hogan/Banking/BANCStar

PROTECH Systems Group Inc
5545 Murray Road, Ste 300
Memphis, TN 38119
800-459-5100 ◆ 901-767-7550
resumes@psgi.net
resourcecenter.com/protech/

Systems Programming Manager

To be responsible, through a small professional staff, for installation and maintenance of VM/VSE, VM/ESA operating systems as well as OEM application support and PC network integration for an IBM 2003 - 106 serving several hundred users. Hiring $ 34,778 - 45,240 depending on qualifications. A stable career opportunity with good benefits and Civil Service protection. Send resumes' to and obtain applications from:

The Lafayette Civil Service Office
PO Box 4017-C
Lafayette, La 70503

@ COMPUTERWORLD

For information on the Tallahassee job market, visit our Web site at: *www.computerworld.com/careers.*

REGIONAL SCOPE

North and Central Florida

TRANSPLANT tales

Looking for better IS opportunities and lifestyles? Many relocatees are finding both in Florida.

In Jacksonville, Orlando and Tampa, leading-edge client/server and mainframe skills are all in high demand. Consulting positions also are rampant in all three markets. *Computerworld* spoke with three IS transplants for their take on each city.

By Leslie Goff

Jacksonville

Anthony Bielobockie

Independent consultant
Relocated from: New York
Moving date: November 1996

Anthony Bielobockie had no intention of moving to Florida. He even told the recruiter he wouldn't consider the job she had in mind for him.

He accepted the initial interview just to be polite. He moved not long after. "They really won me over with the project," Bielobockie says. "I left New York to follow better work."

The project was a three-tier client/server database application at mortgage company HomeSide Lending, Inc. Bielobockie, 29, signed on as an independent consultant with a long-term contract.

In New York, he says, he was a "grunt," a contract programmer who coded a call center application for Nynex Corp. In Florida, he is the senior technology architect for the mission-critical application, which ultimately will automate the full mortgage application, processing and approval process.

When it is finished, the Java/Oracle/Common Object Request Broker Architecture application will let homeowners apply for and qualify for loans over the telephone.

Jacksonville offered better pay and a lower cost of living than New York. Bielobockie's salary increased 50%, and he traded in his high New York rent for a monthly mortgage on a three-bedroom house with a two-car garage that he bought for less than $90,000.

The HomeSide project should last until April 1999.

Once it ends, Bielobockie expects to move back to New York, even though the local job market is strong and experienced programmers are in high demand — particularly C++ and Java developers.

Socially, Jacksonville doesn't have a lot to offer a young, single professional, Bielobockie says.

While he enjoys the beaches, parks and mountain bike trails around town, he misses New York's live music scene — especially the many jazz clubs — and the restaurants where he could get a four-star meal on a shoestring budget.

TYPICAL SALARIES IN NORTH AND CENTRAL FLORIDA

Chief information officer	$123,000
Director of systems development	$73,000
Director of networks	$72,000
Manager of voice and data communications	$65,000
Project manager, systems and programming	$65,000
Computer operations manager	$62,000
Database manager	$60,000
Systems analyst	$55,000
Senior systems programmer	$54,000
Systems programmer	$50,000
Webmaster/Web designer	$50,000

Source: Computerworld's 1997 Annual Salary Survey

Tampa

David O'Malley

Programmer/analyst, Time Magazine Customer Service
Relocated from: Portage, Ind.
Moving date: April 1997

When David O'Malley gets home from work each day, he puts on a pair of shorts and sandals and lounges by his pool.

Later in the evening, he and his wife go out to try a new restaurant and enjoy the warm breezes off the Gulf shore.

It's a long way from shoveling snow six months of the year in northwest Indiana.

"I like the lifestyle here. I'm not sure I would consider it easier; it just presents a different set of issues," O'Malley says.

O'Malley has found more in Tampa than a new lifestyle.

The former data center manager has launched a second career, returning to his roots as a mainframe programmer/analyst. In exchange, he's getting what he considers a paid, 10-year trial run in the area he and his wife had chosen for their retirement. His new employer, information systems contracting firm Computer Management Consultants (CMC), reimbursed him for a large percentage of his relocation costs.

He devised his grand plan when his employer of 30 years, Inland Steel Co., offered him an early retirement package as part of a downsizing move in 1994.

O'Malley accepted and would have left Portage to prospect warmer climes then, at age 50, but Inland hired him back as a consultant for two years.

In February, O'Malley hit the World Wide Web to scout jobs in the Carolinas and Florida; he settled on Florida because it doesn't have a state income tax.

CMC hired him for a DB2 database project at Time's customer service operation. After six months on the job, Time exercised its option to hire him, and O'Malley joined the company on Oct. 20.

Orlando

Jim Waters

Vice president of IS, Universal Studios Florida
Relocated from: Denver
Moving date: January 1997

On his lunch hour, Jim Waters strolls the streets of New York, Los Angeles or San Francisco, depending on his mood. As the vice president of IS at Universal Studios Florida in Orlando, recreated movie sets are his playground.

Waters was the head of IS at a small marketing firm in Denver when a friend told him Universal Studios needed an IS chief to lead a total replacement of its legacy systems.

He leaped at the chance faster than you can say Bates Motel.

"I had previously lived in Sarasota, Fla., so I knew what living in the state was like," Waters says. "But what interested me most was the job. Because we're a theme park, we have a large variety of core systems — food service, merchandising, ticketing, call center, travel services — as well as the systems any company would have."

As a new resident of the area, Waters says the biggest misconception about Orlando is that it's only a tourist town. It has a cosmopolitan population, drawing relocatees from around the world, he notes. □

Goff is a freelance writer in New York.

GATX Logistics
Your Partner For Integrated Services

Although our excellent technology and systems make our jobs easier and our corporation stronger, we would be nowhere without the support of our highly-skilled employees. We're **GATX Logistics Inc.**, an industry leader in providing integrated third party logistics solutions through warehousing, transportation and information systems. With our total market coverage now in excess of $300 billion and with potential customers moving aggressively to outsourcing, we have tremendous opportunities at our **Jacksonville, Florida** headquarters for the following professionals:

SENIOR PROGRAMMER ANALYST
Transportation

Develop and code programs in RPG III/IV and utilize EDI Translators and Mappers in an AS/400 environment using EXTOL and AS/400 utilities and communication facilities. At least 3 years of experience with RPG programming and EDI tools utilizing ANSI transaction sets for warehousing and transportation required.

SENIOR SYSTEMS ANALYST
Synon 2E

Perform fact finding, analysis, and system engineering for entire business systems and sub systems. Analyze performance of applications systems and internal objects, to include base objects, and take corrective action. Design and implement program specifications for applications, abstract object classes, and review of standards and development methods to comply with industry standards and guidelines (Component, Object Model, MFC, Obsydian, etc.). Define and assist in database development and design and standards of usage. 11+ years of experience required. Must have knowledge of Microsoft Visual C++ and Visual Basic. Advanced structured programming skills, experience with several relational databases, OS/400 RPG or Synon 2E desired.

SENIOR PROGRAMMER ANALYST
Client/Server

Develop application software in Visual Basic, Visual C++, and/or SQL for warehousing and distribution applications in a client/server environment. Structural programming experience, including CASE tools, and an understanding of relational database concepts are required.

4-year degree or equivalent experience required for all positions.

Technology will continue to change, but our employees will always have the same drive for success. If you have the determination to succeed in a challenging industry, then please forward your resume and salary requirements to: **GATX LOGISTICS, INC., Staffing, 1301 Riverplace Boulevard, Suite 1200, Jacksonville, FL 32207 or Fax: (904) 396-5647 or e-mail: sjoakman@interramp.com (NO PHONE INQUIRIES OR RECRUITERS).** Equal Opportunity Affirmative Action Employer M/F/D/V

ATTENTION CONTRACT & PERM

Up to $135.00 per hour. Any and all skills are of interest to us with immediate positions for the following:

- **GEAC MSA "E" series** Financials, HR/PR
- **M&D "M" series** Financials, HR/PR
- **SMARTSTREAM** client server, all modules
- **PEOPLESOFT** - Financials, HR/PR
- **Internet/Network Bus Sys Mgr**
- **MS Excel/VB Finance Apps Integration**
- **Adabas/Natural**
- **PowerBuilder, C++, Sybase**
- **C++**
- **Oracle Apps P/A's**
- **BPICS MRP**
- **AS/400 COBOL Sys Programmer**
- **COBOL Yr 2000**

send resume/call:

EN-DATA CORPORATION
P.O. 2949
SANFORD, FL 32772-2949
Ph: 407-323-0033
Fax: 407-323-0685
email: info@is-careers.com

For more comprehensive details and locations, visit our web site

http:// www.is-careers.com

High tech jobs.

No bull.

www.dice.com

DATA PROCESSING INDEPENDENT CONSULTANT'S EXCHANGE

Don't gamble with your job search. Use DICE.

A Service of D&L Online, Inc: 515-280-1144

Computer
FLORIDA'S GULF COAST
Land of Sunshine and Opportunity!

FLORIDA

We are a group of financial services companies which specialize in life insurance, annuities and mutual funds. Located in Florida's beautiful Tampa Bay area, we are known as Western Reserve Life Assurance Company of Ohio, IDEX Mutual Funds and InterSecurities. Our combined assets are over $5 billion and we have a workforce of 1100+.

We are now seeking **Programmer/Analysts, Business Analysts and Consultants** with life insurance industry experience and/or Life Comm, Life 70, Cybertech and Vantage.

Representatives will be in the CT and NY area to meet you the **week of November 13 through November 20.** To schedule your interview:

Call 1-800-443-9975 ext. 3312, FAX: (813) 587-1872, 201 Highland Avenue, Largo, FL 33770. E-mail: jruggiero@aegonusa.com, Website: http://www.westernreserve.com, MIS Jobline: (813) 587-1858. EOE

AEGON Insurance Group

ANALYSTS INTERNATIONAL CORP.
Over 30 Years Of Excellence

AIC is a leader in information systems consulting with over 4,000 consultants nationwide. We have a growing demand for consultants in the following technologies:

- COBOL, CICS
- COBOL, IMS or DB2
- C, C++, UNIX
- VC++, JAVA
- INFORMIX, UNIX, C
- DBAs
- TANDEM
- ORACLE
- VISUAL BASIC, ACCESS

Analysts International Corp.
(813) 281-0458
(813) 289-9475 Fax
(800) 949-5395
cmullen@analysts.com

EOE, M/F/D/V

ACT
AMERICAN COMPUTER TECHNOLOGIES

Right Time
Right Place
Right Company!

ANALYST PROGRAMMERS
Orlando-Jacksonville, FL

We are American Computer Technologies, a software consulting firm. We provide our clients with On-site and Off-site consulting services. The backbone of ACT's success is due to our technical staff. We offer contract, right to hire & perm positions. We require a minimum of 2 years relevant work experience.

- Windows NT, Visual C++, MFC
- CORBA, COM, DCOM
- MQ Series
- OS/2, SQL, C
- DB2, CICS, IMS
- CICS, COBOL II, EZTRIEVE
- Allbase 4GL
- Unix, C, C++, RDBMS
- Oracle w/C++
- Tuxedo w/C++
- Natural
- OIT/Neuron Data

Please mail, fax or email resume to:
Attn: Rob Stadulis
American Computer Technologies
2200 Lucien Way Suite 195
Maitland, FL 32751

(407) 875-1188 x206
(800) 228-7185 x206
Fax: (407) 875-2058
Email: recruiter@actconsulting.com

Global Resource Management
Technology Consultants

Business Analyst w/ Imaging/Workflow	**IEF, Natural**
Conversant/VIS/IVR, C++	**System Testers**
Watermark/Mailstream	**Technical Recruiter**
IMS DB/DC, COBOL, Easytrieve	**JAVA, UNIX, C++**
	DB2, COBOL, SAS

Immediate Openings For:
Dedicated professionals whose satisfaction is derived from Financial Compensation that exceeds the norm.
Benefits include: Medical, Dental, Life, Short & Long-term Disability, 401K

GLOBAL RESOURCE MANAGEMENT
7785 Baymeadows Way, Suite 108
Jacksonville, FL 32256
904-443-2900 (voice) • 904-443-2999 (fax)

Waldec IKON Technology Services

WORK TO WIN.....

Waldec/IKON Technology Services is a $4 billion leader in computer systems integration, providing a higher level of service to clients and enhanced career potential to Associates. Join our growing team by exploring the following career opportunities:

Tampa Bay Headquarters
General Manager/Tampa Branch

Will provide leadership and direction while maintaining full P&L responsibility for this $40 million branch office. Responsibilities include sales direction, extensive contact with clients at CIO/CEO level and ultimate quality assurance of all branch engagements and client delivery.

Vice President, Sales & Marketing

This is a newly created position, resulting from our ongoing growth and expansion. Encompassing corporate responsibility, this position will provide visionary direction for all sales departments, as well as cohesion for marketing and sales.

Ft. Lauderdale/Miami Branch
Hardware Service Manager

Responsibilities include management of computer technicians and department P&L within this $15 million office. Will also manage and direct daily customer service calls, as well as long-term client relationships and outsourcing. Candidate must possess a background in mid-range and micro-computers.

Additional opportunities may be available. Inquiries at all levels are encouraged.

Our excellent compensation and benefits package includes a 401K. For immediate consideration (deadline for resume submittal is November 10th) forward your resume to **Waldec/IKON, Human Resources, 5050 W. Lemon Street, Tampa, FL 33609. E-mail: jobs@waldec.com. FAX: (813) 261-2500.** EOE M/F/D/V

WITH THE VISION TO WIN!.....

When You Bring Your Talents To An Industry Leader, The Sky's The Limit.

IMA Plus is a customer-focused, advanced technologies systems integrator. We deliver economical proven solutions to today's business challenges. It's that philosophy that has propelled us to be one of north Florida's leading consulting firms. We now have many exciting opportunities for Software Professionals with any of the following skills:

- COBOL, CICS, IMS, DB2
- PowerBuilder (CPD)
- Unix C++ •People Soft
- Certified Lotus Notes Developer
- AS/400 COBOL & RPG II
- Sybase DBA

We offer our employees & consultants the most comprehensive benefits package, generous pay scales and a support staff to assist you every step of the way! If interested, please call or forward your resume, in confidence, to our Recruiting Dept. at:

IMA PLUS
9428 Baymeadows Road
Suite 500
Jacksonville, FL 32256
PH: 800-IMA-1886 or
904-636-6100
FAX: 904-448-1860
Email: nicol@imanet.com

Equal Opportunity Employer M/F/H/V

ima·plus
ENTERPRISE COMPUTER SOLUTIONS

ORACLE Financial Opportunities

Design Data Systems, *one of the fastest-growing high tech companies in the country*, is a multimillion-dollar software developer of Accounting and Business Applications for the **ORACLE** Mid-Market. We are seeking industry professionals with Accounting & Distribution and/or Oracle expertise for the following ***permanent*** positions:

- **Software Designers**
- **Programmers/Analysts**
- **Project Managers**
- **Software Sales**
- **Technical Support Specialists**

We offer competitive salaries & incentive bonuses, industry-leading benefits, and an in-house training facility to enhance your skills!

Fax your resume c/o Human Resources, 813.539.8042, or E-mail at humanresources@designdatasys.com

Join A Winning Team

DESIGN DATA SYSTEMS

Florida's ORACLE Software Development Company!

www.designdatasys.com

Interim. TECHNOLOGY — FLORIDA *opportunities*

Interim Technology - The Consulting Group establishes quality relationships not only with our clients but also with our consultants. We focus our efforts on identifying the RIGHT opportunity for YOU. We are hiring IS professionals with a minimum of 3 years experience for immediate opportunities throughout Florida:

- Visual Basic, C++, SQL, WIN NT
- C, C++, SQL, UNIX
- MicroFocus COBOL, UNIX
- JAVA, C++, UNIX
- PeopleSoft Professionals
- CICS, COBOL, DB2, IMS
- IMS DB/DC, COBOL
- DOS/VSE, IMS, CICS, COBOL
- Assembler Programmers
- Mainframe Testers & Leads
- GUI Testers & C/S Testers
- Oracle and Informix DBAs
- IMS and DB2 DBAs

Interim Technology offers the opportunity to work with our diverse and progressive client base, competitive salaries, professional growth and paid benefits including 401K. Forward Resume to:

Interim Technology - The Consulting Group
Orlando, Tampa, Jacksonville, Ft. Lauderdale
Phone: 1-800-393-6274 Fax: 1-800-881-5475
E-Mail: Intertec@InternetMCI.com

ALL YOU NEED IS INTERNET ACCESS
FREE SEARCHING
NO CHARGE TO SEARCH THE DATABASE!

Find training now.

CAREER AGENT
careeragent.COMPUTERWORLD.com

Isn't it nice to know you're reading the best online weekly?

21 Of The World's Smartest Interactive Media Experts Agree On One Thing: @Computerworld Has The Best Editorial Content

An international panel of 21 authorities in the fields of journalism and interactive publishing selected @Computerworld from among 160 entrants representing 26 different countries for top honor in the weekly category for "Best Online Editorial Content". Editor and Publisher Interactive sponsors the awards, now in there second year. Other winners this year included The New York Times on the Web and C/NET.

If you haven't visited us lately, here's what you're missing:

- Latest News updated three times daily
- CW Audio With Online Audio from Industry Newsmakers
- The @Computerworld Minute, a daily online audio news program
- Tech City- A New World Of IT Commerce and Service
- The @Computerworld Quick Poll - Your opportunity to be heard on industry issuesPlus online forums and weekly features from Computerworld and the @Computerworld staff of online editors.

So, find out why Editor & Publisher singled out @Computerworld. Visit us today at www.computerworld.com.

1997
Editor & Publisher
BEST NEWSPAPER ONLINE SERVICE WINNER
Award: Best Editorial Content
By An Online Newspaper Service
Category: Weekly and Other
@COMPUTERWORLD
www.computerworld.com

@COMPUTERWORLD
The Online Connection for Information Technology Leaders

www.computerworld.com

VISION. LEADERSHIP. GROWTH.

At Pratt & Whitney, our vision is to create market leadership and product distinction through Information Technology. A division of Fortune 50 leader United Technologies Corporation, Pratt & Whitney is an innovative leader in the Aerospace industry. We build the future by fostering and combining the energy and diversity of an exceptional group of IT professionals. Vision, leadership, innovation and technology have made us what we are today. If you're one of these exceptional people, look into one of the extraordinary Connecticut or Florida opportunities below.

- Process Controls Engineers
- Client Server Analysts
- Software Engineers
- Software Quality Assurance Specialists
- Business Systems Analysts
- Manufacturing Systems Analysts
- Network Engineers
- DEC VMS System Manager
- Systems Integration Professionals

GET YOUR CAREER FLYING HIGH.

In addition to a state-of-the-art Information Technology work environment, we provide excellent compensation and comprehensive employee benefits, including relocation and 100% paid continuing education program. For immediate consideration, please forward your letter of interest and resume to: Information Technology Opportunities, Pratt & Whitney, 400 Main Street, M/S 101-29, East Hartford, CT 06108. Email: misjobs@pweh.com Visit us on the Internet at www.pratt-whitney.com

Pratt & Whitney
A United Technologies Company

Creating market leadership through technology and the diversity of our workforce. An Equal Opportunity Employer.

GLOBALINK

Moving Language Translation Software to the 21st Century

Globalink, the industry leader in producing next-generation language translation software, is setting new standards for future machine translation systems and for the MT industry. Our innovative Barcelona technology allows for unprecedented growth in the development of core translation technology and new language pairs. Currently staffing research efforts in San Diego, CA in the areas of context-free parsing, transformational morphology, statistical analysis, and large-corpus lexicography.

PROGRAMMERS

Work in an innovative field using your creativity and C++ skills to the max in a team environment. Write code for our software products. Work from design documents, accurately estimate development times, and deliver projects according to schedule.

LINGUISTS

Responsible for development of linguistic components and coordination of linguistics projects and planning. Provide language-specific linguistic support in Spanish, French, German, Italian, and Portuguese.

[redacted] Lee Highway, Fairfax, VA 22031
[redacted] Garr, Chief Technology Officer
[redacted] 273-3866
[redacted] bgarr@globalink.com
[redacted] calls please / EOE

Something for everyone.

CPL WorldGroup is an international consulting company which has been placing highly skilled computer consultants around the world for more than 25 years.

With the breadth of in-demand USA contracts coupled with the right skills, you will virtually have the opportunity to do what you want, where you want. We specialize in assignments using the following skills:

- NATURAL/ADABAS CONSTRUCT
- COBOL/CICS/DB2

Interested? FAX or e-mail your resume to: CPL WorldGroup.510/472-4904: contract@cplworldgroup.com

CPL WORLDGROUP

Computer Opportunities

Bring Your Vision And Desire For Challenge To A Company Where Teamwork Works!

GRACE Technologies is a nationwide senior-level systems-integration and application-development firm as well as an Oracle reseller and alliance partner.

Our continuing growth has created opportunities in CENTRAL NEW JERSEY for talented professionals in the following areas:

- **LAWSON HR/PAYROLL**
- **LAWSON FINANCIALS**
- **ORACLE DBA/TURNER**
- **SYSTEMS ARCHITECT**
- **INTERFACE DEVELOPERS**
  (Data migration experience necessary)

If you have the right qualifications we have generous compensations, including strong career potential. For immediate consideration, Call or Fax/E-mail resume to: **Technical Recruiter**

GRACE TECHNOLOGIES
322 Rte 46 W., Suite 250 E
Parsippany, NJ 07054.
FAX: (201) 244-9342
TEL: (800) 767-7017 ext. 341 or 322
E-mail:Recruiting @gracetech.com.

Grace
Consulting, Inc.
Maintenance Int.
TECHNOLOGIES
ORACLE

EOE

BETHESDA HEALTHCARE SYSTEM
We Belong To You

Bethesda Healthcare System a not-for-profit community hospital is seeking qualified professionals to fill the following positions.

Network Administrator
Bachelor's in science end CNE required. Exp. in Windows NT, Novell and Ethernet req. Responsible for controlling and assisting with expansion of wide erea network growth.

Systems Analyst
Seeking an individuel w/ e computer science degree plus 2-4 yrs epplication automation development exp. in healthcare related field. SMS application exp. preferred.

Technical Analyst
Network Analyst, CNE required, 2-4 yrs experience in WAN development/support. Internet expertise required.

We offer competitive salary, and excellent benefits. Please send/fax resume to:

Bethesda Healthcare System
2815 S. Seacrest Blvd.
Boynton Beach, FL 33435
(561) 737-7733 ext. 4441 Fax (561) 737-7057
Smoke/Drug free workplace / EEO

MICROCOMPUTER NETWORK SUPPORT SPECIALIST: Opportunity in Tampa FL. Requires Bachelor of Science degree/Electronic Engineering; experience wth Windows NT. Team player. Contact: Mr. Sean Buckmaster, 1465 W. Busch Boulevard, Tampa, FL 33612.

Systems Analyst. SALARY: $43,375/yr. HOURS: 8:00 a.m. to 5:00 p.m., 40 hours per week. JOB DUTIES: Analyze users requirements, and procedures to automate computer systems processing and applications by designing, coding, testing, implementing tunctional & object classes in PowerBuilder GUI and C++, with Sybase, Intormix RDBMSs in Unix client/server environment, using Rational Rose; to code processing using C, C++, Unix C shell, Unix IPC, Sybase DB Library and Intormix ESQL/C; end to code unix level screens using Sybase APT, APT Library, Intormix I4GL, R4GL and ACE. Develop CASE methods for client/server RDBMS using ERWin. EDUCATIONAL REQUIREMENT: Must have Masters or equivalent degree with a major in Computer Science or Engineering (also see under 'special requirement'). EXPERIENCE REQUIREMENT: (see under 'special requirement'). SPECIAL REQUIREMENT: In lieu of Masters degree, applicant can have Bachelors in Comp. Sc. or Engineering degree plus two years of work experience in job offered or in related occupation of software engineer using skills in PowerBuilder GUI, UNIX and C, Informix ESQL/C, I4GL, R4GL, Sybase APT Workbench, APT Library, and DB Library. Job located in Atlanta, GA. Send resume or apply in person at: Georgia Department of Labor, Job Order #GA 6161296, 2943 North Druid Hills Road, Atlanta, GA 30329-3909 or the nearest Department of Labor Field Service Office.

Claridge
Casino Hotel
Smatter, friendlier and so much more.

MIS NETWORK ADMINISTRATOR
Minimum 2 years Novell Netware system experience and working knowledge of LAN programming design, testing and documentation techniques.

PROGRAMMER ANALYST
MIS
Minimum two years RPG III and AS400 programming experiencerequired.

We offer a competitive salary based on experience and a pleasant working environment. Please send resume with salary requirements to: **Director of Employment and Recruitment, Claridge Casino Hotel, PO Box 448, Atlantic City, NJ 08401. Or you may fax your resume to: 609 340-3165.**

Women, Minorities, and Persons w/disabilities are encouraged to apply. We are an EOE subject to the rules & regs of the NJCCC. All prospective employees are required to pass a substance abuse test as a condition of employment.

Atlanta. Sr. Development Programmer. $45,543-$65,000. M.S. Computer Science, Elec. Engrg; 1 yr. experience UNIX, C++, database, object-oriented design. 40hr. wk. Several positions available. Must have proof of legal authority to work in the U.S. Send resume to Security First Technologies, Inc., 3390 Peachtree Rd, Ste. 1700, Atlanta, GA 30326-1108. Attn: Ms. Klingler.

Sr Programmer/Analyst: Develop computer programs for WWW-based banking applications in UNIX, Windows environments; analyze, review & modify existing programs to meet international customers' needs; create new programs for testing changes to existing programs; provide program development & change documentation. Must be able to program using object oriented programming in C++, GUI, CGI, HTML, SQL, TCP/IP, socket level interfaces, relational database interfaces & WWW technologies: must have MS in Computer Sci. $56/yr, M-F, 9-5, Ref. req'd. Send two copies of resume to Case #70839, PO Box 8968, Boston, MA 02114.

SENIOR SYSTEMS PROGRAMMER: 40 hrs per wk., 9:00am-6:00pm., $41,575.78 per yr., B.S. in Computer Science. Job is in Gainesville, Fla. 2 yrs. exp. in the job offered or 2 yrs. exp as a System Analyst. Development of new maintrame connectivity products that allow computers to communicate with a mainframe through specialized maintrame interfaces including BUS & TAG (Channel Adapter), Synchronous Data Link Control (SDLC) Adapter & Enterprise System Connection Architecture (ESCON). Development & enhancement ot e network job entry tamily ot products to reside on e New Technology (NT) Platform; Develop e set ot Transmission Control Protocol/Internet Protocol (TCP/IP) Printing Modules & use of Line Print Requestor/Line Print Daemon (LPR.LPD); and development ot new products tor Systems Network Architecture (SNA) Server. Send resume to Dept. ot Labor/Bureau ot Operations, 1320 Executive Center Drive, Atkins Bldg., Ste. 100, Tallahasse, Fla. 32399-0667. JO#FL1688298.

An Atlanta-based medical supply company is looking for a Financial Application Programmer. Qualified candidate should have: bachelor's degree in computer science or MIS; proficient with C++, VB, ORACLE, SAS, SQL; minimum 2 years full-time programming experience; SAS programming experience; and strong SQL skills. Competitive salary and benefits. Fax resume to: (770) 582-3898, email rrodriguez@orex.com Attn: Ruben Rodriguez

Senior Software Engineer. Design and implement three-tier business applications on Common Object Request Broker Architecture (CORBA) standards. Specifically design and develop cross-platform distributed applications using object modeling techniques. Demonstrated ability in developing distributed network applications with TCP/IP using C and C++ programming; Demonstrated ability in developing applications on multiple platforms such as UNIX, MS-Windows and IBM MVS/ESA. $70,000/yr 40 hr/wk. 9 a.m. - 5 p.m. B.S. Eng. rel. field/equiv. Must have 3 yrs. exp. or 3 yrs. exp. as Software Engineer. Send 2 resumes: Case #71397, P.O. Box 8968, Boston, MA 02114.

Software Eng. II. MSCS + 6 mo. program. exp. Design & code in C, C++ & visual basic languages. Design & dev software for loan process sys, credit report & communication on Windows 95, Windows NT, Windows 3.1 operating sys.; eval. interface re: setup, implement. & configuration utilizing Microsoft Visual C++, MFC, DDE, C-tree, T-tree, Assembler, INETCO, Windbatch, Winport software. Doc. Knowledge: writing in C & conversion software from DOS to 16 bit Windows & between proprietary mainframe formats; dev. interprocess communication apps thru TCPIP & dialogic software & hardware. $42,944/yr. Send resume: Marilyn Hall, HR Mgr, Life Investors Ins. Co. of America, 1100 Johnson Fry. Rd, Suite 300, Atlanta, GA 30342.

Senior Member - Technical Staff (Software Engineer): Design, test, modify, implement wireless software switch(s), telephony enhancements & interface wire/wireless networks inc. D900 projects for GSM, CDMA, PCS-1900, signellings MAP, BSSAP, ISUP, International Roaming, SMS, IWF, EIR using knowledge of CHILL, Assembly Languages. Design, coordinate high-end customer tech support. Provide source/physical patching, tech documentation/coordination ot dev & scheduling. Req: Bachelor's in Science or closely related field plus 4 yrs exp. $60,000/yr. 40hrs/wk. 8a/m-4:45pm. Job is located in Boca Raton, FL. Submit resume to: FDLES Bureau of Operations, 1320 Executive Center Dr., Suite 110, Tallahassee, FL 32399-0667. Re: Job Order # - FL 1686733.

SOFTWARE ENGINEER (ATLANTA, GA) Develop applications tor Windows 95, Windows NT, UNIX & products tor World Wide Web; study reqts./prepare Software Reqt. Specs; design/test @ module system level w/ OMT OOD; implement system w/Visual C++ 4.2 w/ MFC; debug existing system (Quality Assurence); fix bugs; write installetions programs. M.S.-Computer Science & 3 yr. exp. as Software Eng. req'd. Strong proticiency - Visual C++ 4.2 w/ MFC, C, Windows SDK, Tools.h++, DBTools.h++, Net.h++, InstallShield, Keyview SDK, HTML, HTTP, OMG's CORBA, OOA, Booch, OMT & OLE, COM, ActiveX. Exp. w/ GUI development & graphics conversion algorithms, Windows 95 & NT internels (GDI, Kernel), Microsoft Developer Studio's Debugging utility w/ Bounce Checker. Familier w/ Retionel Rose & VISIO. 40 Hrs./wk., $53,000/yr., OT es needed. Apply in person or by resume to Job Order #GA 6161301, GA Dept. of Labor, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or nearest Dept. of Labor Field Service Office.

Find training now.
careeragent.computerworld.com
CAREER AGENT
careeragent.COMPUTERWORLD.com

project
database a
data analyst
NT consultant
technical specialist
project leader
THESE POSITIONS AND MORE ARE WAITING FOR YOU
NT specialist
programmer analyst
MS ce
certified trainer
project manager - year 2000
database administrator
unix systems administrator
Careers
COMPUTERWORLD
http://careers.computerworld.com

Because the Needs Are Greater, So Are the Rewards.

Database Applications Developer/Programmer - Cardiology

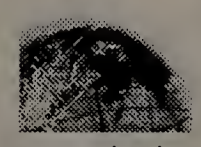
Seeking an experienced database programmer to develop and maintain clinical data applications in a client-server Oracle 7 environment. Creates and upgrades applications and transfers from minicomputer legacy system. Experience with JAM and/or other front-end programming tools desired. Job Code: ISCKE-G

Please send resume, indicating Job Code, to: ***Children's Hospital, Human Resources, 300 Longwood Avenue, Boston, MA 02115.***
Fax: (617) 355-7884.
No phone calls, please. Visit our website at: ***www.childrenshospital.org/jobs/***

Children's Hospital Boston

At Children's we place a strong emphasis on the values of equality, diversity and compassion.

THE AMP ADVANTAGE.



Connecting at a HIGHER level.™
AMP

Fifty-six years of listening to customers and anticipating trends have earned us recognition as the world's leading producer of interconnection systems and solutions. Through yesterday's inventions, we arrived at today's technologies. And today, our Fortune 300, $5.4 billion company creates electrical, electronic and optoelectronics possibilities for the next millennium and beyond.

Confidently, AMP has the interconnection advantage with systems integration connecting us to 185 locations internationally and 300,000+ global customers. Imagine the challenging projects which demand advanced IT talents in:

SAP, ORACLE, SMALLTALK, JAVA, CORBA, SQL, C, C++, WINDOWS NT, AND VISUAL BASIC.

Consistently voted among Computerworld's Best Places to Work and Tops in Training, we offer attractive compensation packages and growth opportunities. For more information or immediate consideration, candidates should reply noting desired income to: Professional Staffing/CW1103, AMP Incorporated, P.O. Box 3608 (4-12), Harrisburg, PA 17105-3608. FAX: 717-592-6031. Pre-employment drug testing is required. Equal Opportunity/Affirmative Action Employer M/F/D/V.

Visit our website at www.amp.com

So you've been a player for a long time and are thinking about a change in pace? How about stepping out of the game and coaching from the sidelines? International Data Corporation (IDC) is the world's leading provider of information technology data, analysis and consulting. With research centers in over 40 countries and more than 300 research analysts worldwide, IDC is uniquely positioned to provide a global perspective on IT market and technology trends.

TIRED OF BEING IN THE MIDDLE?

RESEARCH DIRECTOR OPERATING ENVIRONMENTS REASEARCH

We are currently looking for a Research Director for our Operating Environment Reasearch Group. The ideal candidate should have a strong understanding of client and server operating environments and distributed computing and an overall knowledge of the software Industry. Strong research, writing, and speaking skills are essential.

If you are interested in learning more about a career opportunity with IDC, please contact Elizabeth Baptiste at:

e-mail: ebaptiste@idcresearch.com
phone: 508-935-4649
fax: 508-935-4610
mail: International Data Corporation
5 Speen Street
Framingham, MA 01701

IDC

Programmer/Analysts NEEDED

Cadmus Communications Corporation, an organization on the forefront of technology and a national leader in the field of marketing and graphic communications is seeking two Programmer/Analysts at our headquarters in Richmond, Virginia.

These opportunities will allow you to develop in a client server environment including intranet web development.

Programmer/Analyst I will design and develop programs, conduct tests on developed systems, research systems for updates and comparisons and recommend system revisions.

Programmer/Analyst II will perform system analysis for moderately complex projects, design and implement solutions to client needs and may serve as project leader on small/medium sized implementations and projects.

We're looking for individuals who have relevant experience including knowledge of IBM AS/400, OS/400 and RPGIII or Synon and/or knowledge of client/server development tools and design using HTML and graphical tools. Good communication skills and the ability to interpret user requests are musts.

CADMUS

At Cadmus, you will receive a competitive salary and comprehensive benefits. Qualified applicants should e-mail, fax or mail a resume, including salary requirements to Human Resources-ay, CADMUS COMMUNICATIONS CORPORATION, PO Box 27367, Richmond, VA 23261-7367. E-mail younga@cadmus.com. Fax 804-287-6267. An Equal Opportunity Employer.

Start Building Your Future Now.

Whether you start as a Programmer or Senior Software Engineer, you will be joining the fastest growing IT services company in the Northeast. We are now hiring team members who would like to share in our continued success. We offer a competitive salary, generous health and welfare benefits, retirement plans, hiring and project completion bonuses and relocation assistance.

All of the following positions require a minimum of two years related experience in one or more of the following: C, C++, UNIX, Oracle, Sybase, Visual Basic, MS-ACCESS, SQL, Powerbuilder, COBOL II, CICS, IMS, IDMS DB2, DBA's, Y2K Projects, VSAM, ARTEMIS, ANSYS, Primavera or Finest Hour Scheduler.

- **Software Engineers**
- **System Developers**
- **Database Administrators**
- **Network Specialists & Administrators**
- **Programmer Analysts**

If you have the qualifications we're looking for and a desire to relocate to the Capital District in beautiful Upstate New York, send your resume with job code P144/CMWL to ProTech, 155 Erie Blvd., Schenectady, NY 12305, email westpa@protechservices.com, or fax 518-393-9518.

ProTech is on Equal Opportunity Employer.

ProTech PROFESSIONAL & TECHNICAL SERVICES

Regional Sales Manager-Latin America to develop & implement country-, market-, & customer-specific strategies for sale of complex networking software to Fortune 500 customers, targeted vertical markets & other large accounts in Latin America. Interacting with customers' senior technical and MIS staff, will: make tech presentations & provide tech info concerning networking software; assist prospective & current customers w/defining network software needs; work w/customer & in-house engineering staff to develop modifications to suit particular customer needs; negotiate & close large sales, w/assistance from home office; & manage sales relationship with customers after installation of Co.'s products. Extensive travel required. Min reqs: BA/BS in MIS. comp. sci. or other tech field; 3 yrs exp in sales or marketing of network-based software to Latin American market; knowledge of open system computer environment; knowledge of South American business practices; fluency in Spanish. Must have unrestricted authorization to work in U.S. $58,000 - $65,000/yr. M-F 8:30 am - 5:30 pm; 40+ hrs/wk. Send 2 resumes to: Case No. 70287, P.O. Box 8968, Boston, MA 02114.

CHIEF COMPUTER PROGRAMMER. Database analysis, design, development, coding, implementation and maintenance of business and financial applications. Define end user requirements, program intent and future version modifications. Convert workflow charts to processable language using Windows NT environment and advanced databases, including Oracle, MS SQL Server, Visual C, Power Builder, Erwin, ODBC. Creating OLE servers, OCX containers, and ActiveX controls. Must be able to conduct data modeling operations for business driven applic's. Must be willing to relocate within the U.S. on a project-by-project basis. Required computer applications: Front-end tools: Visual Basic, Visual C, Power Builder, Crystal Report, ODBC drivers. Databases: Oracle 7.x, Sybase SQL Server, MS SQL Server. OLE Server/OLE Client, object-oriented programming with classes. Must have Bachelor's or foreign degree equivalent in Electrical Engineering/Computer Science or related and 8 years' work experience in job offered or 8 years in a related occupation such as Analyst Programmer, Software Engineer, or related. Hrs: 9a-5p, M-F, $58,400 per yr. Apply to Georgia Dept. of Labor, Job Order #GA6161626, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

CONSULTANTS

IMMEDIATE INTERVIEWS: FLORIDA & NY/NJ/CT

MAINFRAME

• DB2 or CICS	• VAX/COBOL	• Internals	• Focus	• Bus/Analysts
• DBAs	• Year 2000	• SAP	• PL1	• BAL
• Natural 2	• AS 400	• CSP	• IMS	• IDMS/ADSO
• Cobol	• Modelers	• Stratus	• CICS 6000	• Qual Assur
• Unisys/Cobol				• Tandem

CLIENT SERVER

• Lotus Notes	• Sybase	• Encina	• C or C++	• HTML/JAVA
• Sys/Admins	• PowerBuilder	• Help Desk	• Qual Assur	• Unix
• Smalltalk	• Win NT or 95	• Visual C++	• DBAs	• Peoplesoft
• Oracle	• NT Upgrade	• TCP/IP	• Vis Basic	• HP Sys/Admin
• LAN/WAN	• FileNet	• Informix	• Testers	• Ingres
• Tech Support	• Novell	• CORBA	• OOA/OOD	• Device Drivers

Rohn Rogers Consulting

Attn: Roger Sichel
1185 6th Ave., 36th Fl
New York, NY 10036
800-421-5158 • 212-921-1319
Fax 800-770-6360

Steve Wyne
1451 W. Cypress Creek Rd.
Ft. Lauderdale, FL 33309
954-489-2700
Fax 954-489-6474

http://www.rohn-rogers.com

Software Development Project Manager: Eastern Massachusetts software firm seeks computer software professional to manage software development, conversion and porting projects. Duties include: project evaluation and management; technical evaluation and liaison; technical support to project team; software development, conversion and porting in multi-platform and cross-platform environments such as UNIX, MS Windows, Windows NT in networking environment such as TCP-IP, LAN and Novell; Quality Assurance and testing; design and development of graphic user interfaces in Visual C++ and server programs in UNIX; development of total software architecture in client-server and distributed systems. Must have: BS in Computer Systems, Engineering or related field and at least 6 years combined experience in software development project management and/or software development. 40 hrs/week, salary $72,000/yr. Send two copies of resume to: Case #61274, PO Box 8968 BOSTON, MA 02114.

HIGH TECH CAREER OPPORTUNITIES

Systems Developers -- COBOL, COBOL II, DB2, PC Desktop Development with Microfocus COBOL.

Composer CASE Tool or CSP a plus. IBM Mainframe, MVS/ESA, CICS. Work with existing Financial, HR, Merchandising systems or new development. Competitive salaries, excellent benefits, an outstanding work environment all located in Charlotte, NC, a growing and beautiful place to live. Please mail or fax resume to:

Belk Stores Services, Inc.
Attn: Personnel Dept.
2801 W. Tyvola Rd.
Charlotte, NC 28217
Fax: 704. 357.1788
E-Mail: Don_Harris@Belk.com

Belk All for you!

VISIT OUR WEB PAGE WWW BELK COM

System Programmers

Rite Aid Corporation is offering unprecedented opportunities for lucrative compensation and creative "extras" to talented Systems Programmers. We will relocate you and your family to beautiful Central Pennsylvania where you will join our world class technical support environment, and enjoy the benefit of working for a company which is not only stable, but continues to experience remarkable growth. We need systems programmers in these areas:

• CICS • MVS • DB2
• VTAM/NCP • AS/400 • VSE
• STRATUS VOS Systems Administrator
• General Software Support Systems Programmer
• Storage Management Systems Programmer

Our primary platform is MVS with a current installed base of over 80 CICS regions across 6-8 MVS images supporting a major DB2 SysPlex/DataSharing environment.

Find out more about us and see all of our IS job openings by visiting our website at http://www.RiteAid.com.

RITE AID

Send your resume to:
Rite Aid Corporation
Michele Krebs
Information Services Recruiter
PO Box 3165, Department CW
Harrisburg, PA 17105
FAX: (717) 975-5954

EEO/AA

The new frontier.

WE'RE LOOKING FOR:

- PeopleSoft Applications Technical Architect
- PeopleSoft Application Implementation Engineers
- Data Warehouse Development and Support Engineers
  • Sybase IQ • Essbase • Visual Basic
- Wide Area Network Administration and Support
- Hewlett-Packard UNIX System Administrator
- Informix Database Administrator
- Global Help Desk Coordinator

Please mail or fax your resume to us indicating the position of interest to you.

FAIRCHILD SEMICONDUCTOR™

Recruitment CW102097
Fairchild Semiconductor
Mail Stop 10-04 • 333 Western Avenue
South Portland, Maine 04106
Fax 207/775-8045

Programmer Analyst needed for Info Technologies Co. in Somerset, NJ. Must have 2yr exp dsgng/dvlpg & maintaining Co's web site using HTML & Netscape; dsgng/dvlpg business prgms & comp systms using SQL* Plus, SQL*Forms, SQL* Reporter & SQR; dsgng/dvlpg HR applics using HTML, Oracle, Unix & Visual Basic. Must have Bach-Comp Sci or Electronics. Respond to: HR Dept, New Age Systems, 1 Executive Dr, Ste 250, Somerset, NJ 08873.

Software Engineer needed for Herdon, VA client site. Must have 2yr exp dsgng/dvlpg/maintaining network mgmt s/ware applics using C++ & OO methods under CMIP/CMISE protocol. Must have MS-Comp Sci or Comp Engg. Respond to: HR Dept, Global Consultants, 601 Jefferson Road, Ste LL, Parsippany, NJ 07054.

Chief Computer Programmer. Plan, schedule and direct prep. of complex programs to process data & solve problems directed toward financial & bus. community, integrating comp. applic's. to bus. requirements; consult with user community to determine programming & coding require's.; provide proj. leadership to develop applic's. software for MS Windows, Novell, DOS/client-server; develop programs from workflow charts; convert workflow charts to language processable by computer; analyze & modify programs to increase efficiency; train subordinates in programming & coding. Must be willing to relocate within the U.S. on a project-by-project basis. Required computer applications: Computer Requirements: Visual C++, MFC, Borland C++, OWL, ODBC, Integra VDB, SQL, CR Reports, Informix, MF COBOL, C, Clipper, Windows Borland DBE Programming, network appl., object-oriented analysis & design, proj. leader training, DOS, Novell, MS Windows, FIN applic's., MIS. Must have Bachelor's Degree or foreign degree equivalent in Economics, Bus. Admin., Computer Sci., or related and 8 years experience in job offered or 8 years as Programming Analyst, Programmer, or related. Hrs: 9a-5p, M-F, $59,000 per yr. Apply to Georgia Dept. of Labor, Job Order #GA6161584, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

SYSTEMS ANALYST f/t. Analyze, design, develop, implement and install client/server business applications using C++, Visual Basic, Delphi, Oracle 7.x, Microsoft Windows API & MPC; evaluate and improve existing systems, consult with users to identify operating procedures and clarify objectives, prepare flowcharts and diagrams. Reqd: BS in CIS or related field. Salary: high 30s. Send resume to: HR Man , TSC, 127 Peachtree Street, Atlanta, GA 30303.

BAY SEARCH GROUP

National I/S Placement Specialists

VISIT OUR WEB PAGE
www.baysearch.com

Looking for:
Oracle, SYBASE UNIX
Visual Basic PowerBuilder,
Web Developers

(800) 637-5499
FAX (401) 245-3117

This Web site
e-mails you with the career opportunities you want.

Register today and use CareerMail

http://careers.computerworld.com

itCareers.
Where the careers find you.

Software engineer with 2 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 2 years of experience using SYBASE and Visual Basic and at least one year of experience with MS Access. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. $58,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 7029444, to: Mr. Stan Majesky, Manager, Office of Employment Security, 653 East High Street, Waynesburg, PA 15370.

Computer Programmer Analyst: Design, implement, test, debug, sftwr. apps. (programs/systems). Work w/bus. + fin. apps., networks. Use AIX/UNIX COBOL, CICS, DB2, JCL on IBM. Must have BS/comp. sci. or engr. + 2 yrs. exp/this job or cmptr. system exec. w/above skills. Salary: $49,600/yr., jobsite/intrvw: Denver; may be temporarily assigned to other sites-employer pays expenses. Application is by resume only; send this ad + resume to: Colorado Dept. of Labor & Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117; refer to order number CO4548139.

Find training now.
careeragent.computerworld.com
CAREER AGENT
careeragent.COMPUTERWORLD.com

Software engineer with 18 months of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 18 months of experience using SAP R/3 and some experience with ABAP/4. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. $200,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 6014723, to: Ms. Charlene Cogley, Manager, Office of Employment Security, 2103 Ninth Ave., Beaver Falls, PA 15010.

SOFTWARE ENGINEER. Database design & client/server based applications development using Sybase, Visual Basic & PowerBuilder data modeling tools. Requires a Bachelor's in Math, Computers, Engineering or related degree program, plus 2 years' work in any occupation with above experience. Must be willing to relocate to various unanticipated work sites throughout USA every 4 to 10 months. Employer will pay for necessary travel from assignment to assignment. Must have proof of legal authority to work in the U.S. Salary: $50,000/year for a 40 hour work week. Interested applicants contact the Oklahoma State Employment Service, 110 South Hartford, Suite 106, Tulsa, Oklahoma 74120, (I.D. #7207). Phone number (918) 592-2111. Job Order #287540. Ad paid by an Equal Opportunity Employer.

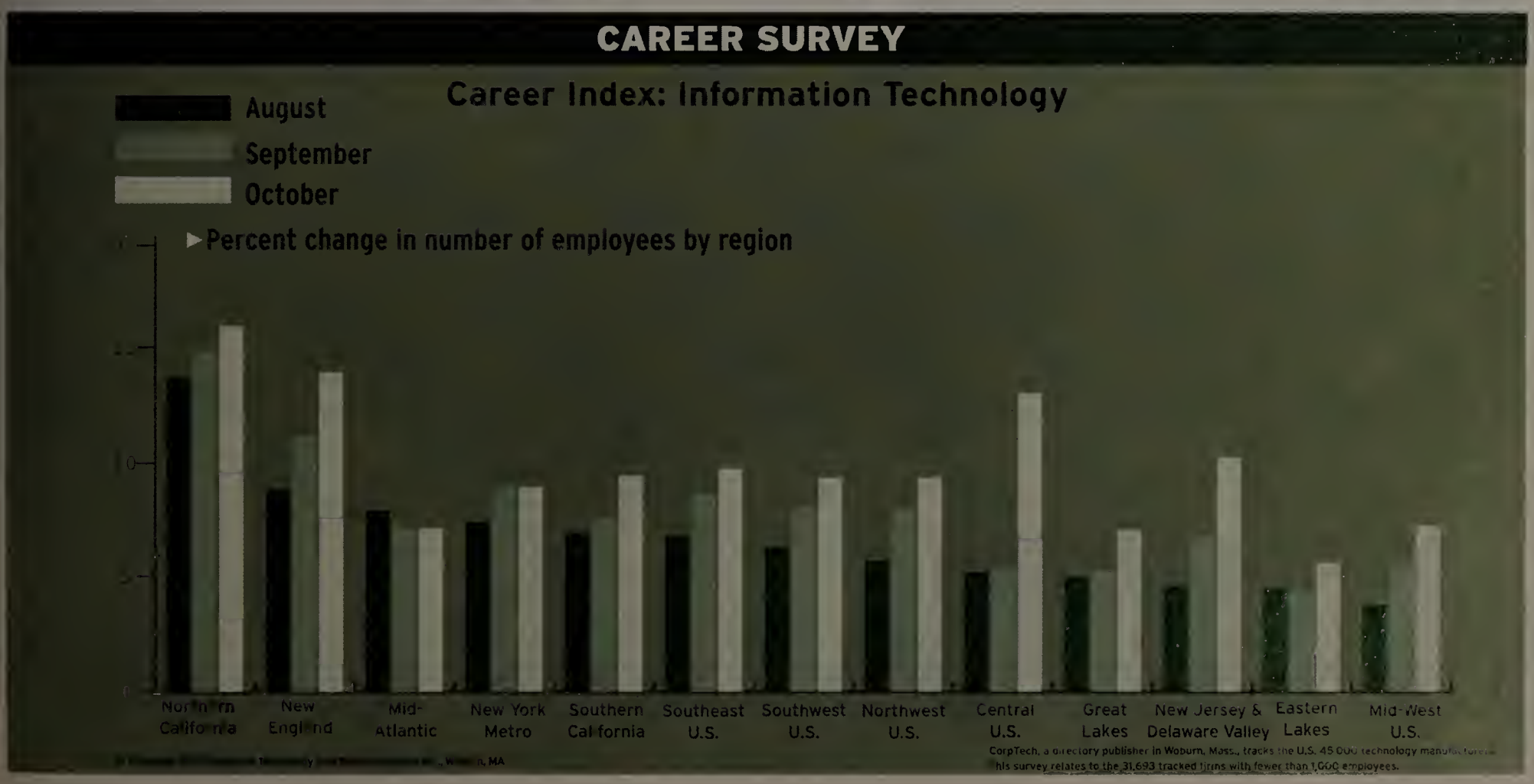
Analyst Programmer needed for systems level programming & related software design for UNIX & Windows NT platforms. Requires a Bachelor's degree in Math, Computers, Engineering or related curriculum, + 2 years' experience in the job offered. Must be authorized to work in the United States. Salary: $34,000/year. Hour: 40 hrs/week, 8a.m.-5p.m. Interested applicants contact the Oklahoma State Employment Service, 110 S. Hartford, Suite 106, Tulsa, OK 74120, (I.D. #7207). Phone number (918) 592-2111. Refer to Job Order #287529, Ad paid by an Equal Opportunity Employer.

SENIOR SOFTWARE ENGINEER. Design, analysis & construction of client-server based information systems architecture for the IBM mainframe using Information Engineering (IEF) CASE tool. Must be willing to relocate to various unanticipated work sites throughout the USA every 4 to 10 months. Employer will pay for necessary travel from assignment to assignment. Masters degree required in Computers, Engineering or other technical degree program, plus 3 years' experience with any occupation with above experience. Employer will accept a Bachelor's & five years of Mainframe systems experience in place of the aforementioned Masters. Must have proof of legal authority to work in the U.S. Salary: $68,000/year for a 40 hour work week. Interested applicants contact the Oklahoma State Employment Service, 110 South Hartford, Suite 106, Tulsa, Oklahoma 74120 (I.D. #7207). Phone number (918) 592-2111. Job Order #287543. Ad paid by an Equal Opportunity Employer.

Programmer Analyst - (10 openings) [J.O.N. # 9075424] Design, develop, test and document computer programs; implementing ORACLE standards; performing user training; using SAP, ORACLE, and UNIX. Reqs: 1 yr. exp. in the job offered and Bach. in Comp. Sci., Systems Analysis, Comp. Info. Systems, M.I.S., Info. Tech., Comp. Info. Tech., Comp. Applications, Engineering, or Mathematics, or its foreign educ. equiv., or its equiv. in educ. and exp. Will accept 3 yrs. of college educ. plus 3 years exp. in a related occupation, which included 1 yr. exp. in the job offered, in lieu of the required edu. and exp. Related occupations include programmer, systems analyst, software consultant, software engineer, senior program analyst, consultant, software engineer, senior software engineer. 40 hrs/wk, 8a-5p, M-F, $60,000/yr. Send resume along with the J.O.N. # to: Mr. Richard Introcaso, Actg. Mgr., Beaver County Job Center, 120 Merchant Street, Ambridge, PA 15003.

CAREER SURVEY

Career Index: Information Technology



CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 31,693 tracked firms with fewer than 1,000 employees.

Plan new career heights with CareerAgent.com

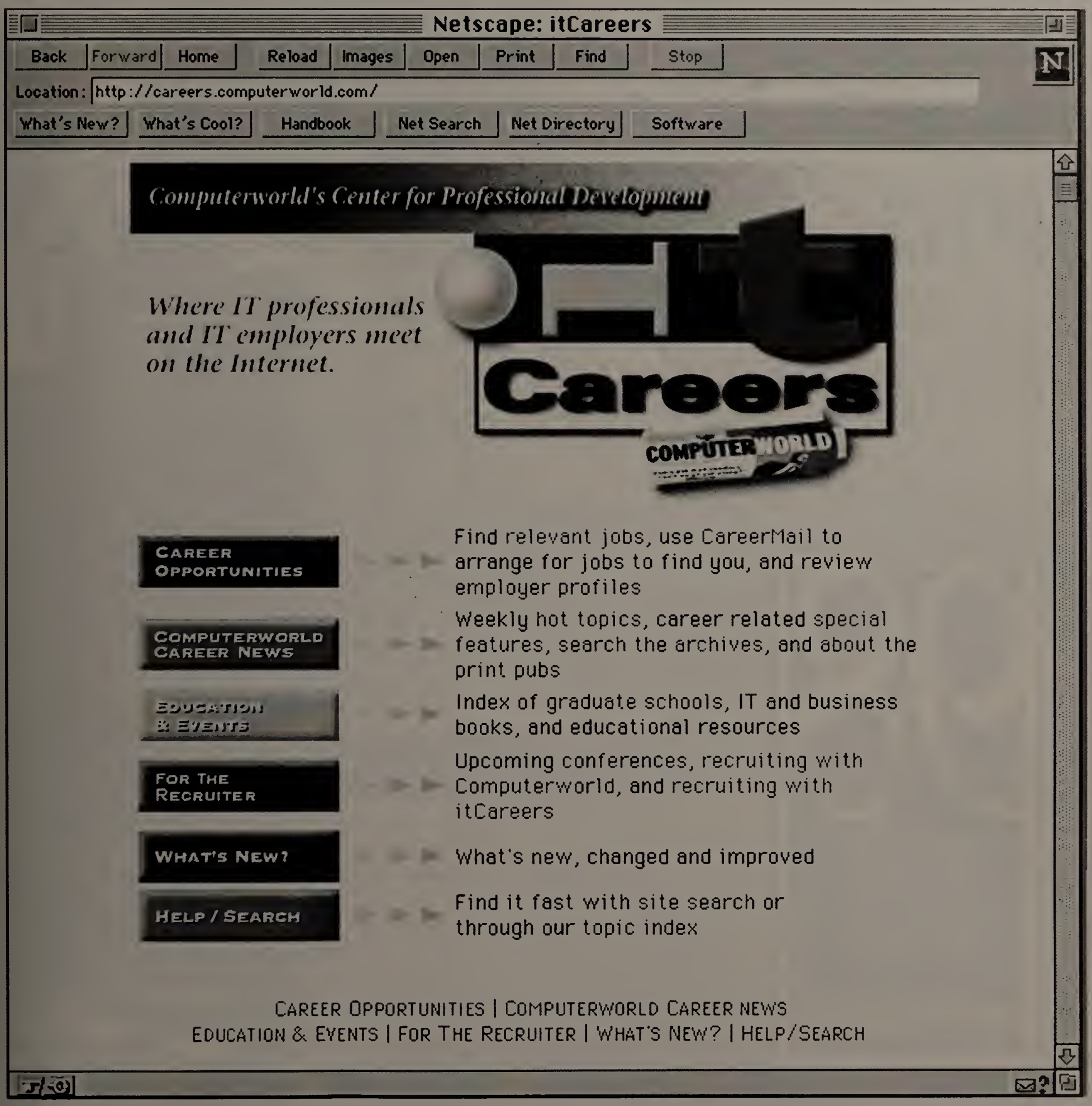
Imagine the time saved if you could search one solid database of IT
Now you can by simply accessing Release 1 of CareerAgent: **careeragent.computerworld.com**

While you're there, check out the preview of upcoming CareerAgent releases. They'll allow IT professionals, individually or through corporate subscriptions, to assess learning styles, establish career goals, calculate individual, group and department skill gaps with an intelligent decision support system, and focus a training search based on priority.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see **careeragent.computerworld.com** or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: a well-planned journey of enrichment.

COMPUTERWORLD
career@gent



http://careers.computerworld.com

Reserve your place now!

1-800-488-9204

98

CORPORATE TECHNICAL RECRUITING CONFERENCE

COMPUTERWORLD

May 17-20, 1998

Marriott's Orlando World Center Resort
Orlando, Florida

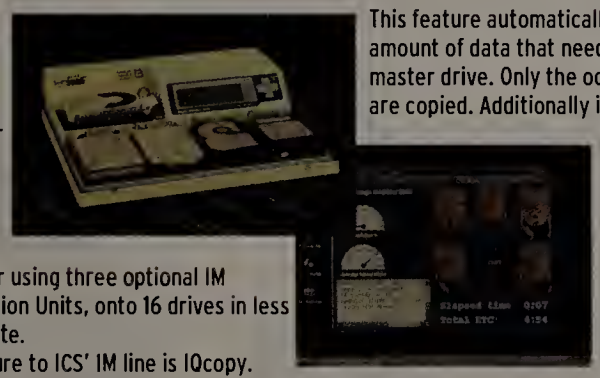
Marketplace

For information on advertising, call 203-857-5100

NEW & NOTABLE

New ICS Image MASSter sets up 16 workstations with Windows 95 or NT in less than one minute

Whether a system integrator is faced with loading a suite of software applications onto hundreds of new computers or the MIS department of a corporation is looking to migrate hundreds or even thousands of PCs to a new operating system, software loading has always been a dreaded task, not to mention time consuming and expensive. Intelligent Computer Solutions (ICS) announces the perfect solution for software loading. The Image MASSter™ 2000 is the fastest most cost effective hard drive software duplication and diagnostic system on the market. It loads software at the blazing speed of up to 300 MB per minute. For example, it will load Windows 95 or Windows NT onto 4 hard drives, simultaneously, in 30 seconds, or using three optional IM 2000x Expansion Units, onto 16 drives in less than one minute.



A unique feature to ICS' IM line is IQcopy. This feature automatically detects the correct amount of data that needs to be copied from the master drive. Only the occupied areas of the disk are copied. Additionally it provides the ability to copy between different size hard drives in the same software load. The IM 2000 is compatible with any size or brand of IDE, EIDE, and Ultra-DMA IDE hard drive, as well as 2.5" and OEM notebook hard drives.

ICS is the technology leader in the design and manufacturing of high-speed software loading systems. MIS customers of ICS products include over 25% of the Fortune 500 companies such as American Express, Morgan Stanley, Chase Manhattan and Boeing. ICS' customers also encompass many major government and military departments.

For more information, visit http://www.ics-iq.com, e-mail sales@ics-iq.com or call 818/885-7500.

Express Storage Remarketers L.L.C.

EMC Remarketing Experts

Anderson & Wells, Inc., has launched its focused EMC remarketing team nationwide and in Europe. The storage experts are positioned to offer a complete line of EMC Series 3000, 4000, & 5000 systems and upgrades at dramatic savings vs. new EMC 5400 & 5700s. "We realize that today's storage requirements are in such an upward spiral that technological superiority must be tempered by realistic price performance. The proven performance of the EMC Symmetrix product offers an outstanding cost effective solution to meet the full range of storage requirements, both mainframe and open system, at a fraction of the cost of chasing newer technology," *Express Storage Group's* Co-founder Michael Flannery said.

"Whether it's data expansion, year 2000 projects, or critical performance requirements, we have an *Express Storage* solution. Move to new technology as your requirements dictate. Use the pricing dynamics to your advantage."

If absolute premium performance is required, *Express Storage* offers aggressive trade in programs that will dramatically lower your cost per gigabyte rather than "cascade" your multimillion dollar investment into the corner. Attractive subleases of your current equipment can also be arranged to reduce large book values that may delay a needed new equipment installation.

Anderson & Wells is an investment firm founded in 1988 located in Phoenix Arizona. *Express Storage Remarketers L.L.C.* is headquartered in Phoenix with offices in Chicago, New York, and London, England. The storage experts can be reached at (602) 253-1041, FX (602) 252-1450, or www.expressstorage.com

ANDERSON & WELLS
INVESTMENT COMPANIES

WIN EVERY WEEK!

Computerworld Marketplace TechnoToys Sweepstakes

Nov. 3 TechnoToy: **Rich Tennant Cartoon Mug**

A mug featuring a cartoon from Rich Tennant, the well-known cartoonist whose humorous work is often seen in Computerworld.

Win one of 10 being given away!

By entering into the weekly TechnoToys giveaway, your name will automatically be entered into the year-end Super Prize Sweepstakes where you could win as much as $25,000 CASH!

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

Fax this completed form, or all of the following information to: (800) 898-2299.

Yes, I want to enter to win a Rich Tennant cartoon mug. Please also enter me in the end-of-year 1997 Super Prize Sweepstakes Drawing.

Name: _____

Title: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

email: _____

Are you currently a Computerworld subscriber?

yes _____ no _____ Issue Date: 11/3/97

No purchase necessary. All entries must be received no later than 11:59 am (EST) Mon., Nov. 10, 1997. Winner will be determined in a random drawing on or about 5:00 pm (EST) Mon., Nov. 10, See official rules within the Marketplace section.

Corporate America

Corporate America has a new look these days thanks to a *Fortune* 500 PC manufacturer from South Dakota. From a two-person start-up operation in 1985 to a $5 billion global company in 1996, Gateway 2000 has taken the PC industry *and* corporate America by storm.

Gateway 2000 Major Accounts, Inc. is there to handle the unique needs of large-volume purchasers. Gateway Major Accounts delivers Value of Ownership: the winning combination of high benefits and low cost for the life cycle of your computer. High-quality PCs custom built for your business that go to work for you right out of the box — that's Gateway.

Want to know more about this cow-spotted business phenomenon? Call our Gateway Major Accounts representatives today, because we mean business.

GATEWAY™ E-Series desktop and Gateway Solo™ portable PCs feature Intel Pentium processors.

MMX™ intel inside pentium® II PROCESSOR

GATEWAY2000

"You've got a friend in the business."®

888-888-0382

www.gateway.com/majoraccounts.htm

Gateway 2000 Major Accounts, Inc.
610 Gateway Drive • P.O. Box 2000
N. Sioux City, SD 57049-2000

GSA Schedule #GS-35F-4565G

© 1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, "G" logo, and "You've got a friend in the business." slogan are registered trademarks, and GATEWAY and Gateway Solo are trademarks of Gateway 2000, Inc. The Intel Inside Logo, Intel and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. Not all Gateway E-Series desktop PCs contain the Pentium II processor. Gateway Solo portable PCs do not contain the Pentium II processor. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc.

Marketplace

For information on advertising, call 203-857-5100

ALICOMP

Which has serviced over 185 diverse clients, specializes in providing VM, MVS, VSE service to clients who need:

•OUTSOURCING
•REMOTE COMPUTING
•YEAR 2000: Mainframe Conversion Test Environment
•TAPE CONVERSIONS
•SYSTEMS PROGRAMMING & NETWORKING SUPPORT SERVICES

Industry experience includes: •Financial Services •Non Profit •Software Developers •Healthcare •Manufacturing/Distributing •Publishing

We are the "Boutique" of the Computer Services World

Serving Clients since 1980

(201) 319-8787 • (800) 274-5556

YOUR CHOICE

INTEL PENTIUM 200 MMX

AMD K6 200

Monitor and Operating System sold separately.

- 512k Pipeline Cache
- 32 Meg EDO Memory
- Mid Tower Case
- 2.0 Gig IDE Hard Drive
- 4Meg EDO Video
- 1.44 Floppy Drive
- 24x CD-ROM
- 16Bit Sound Card
- 60 Watt Speaker System
- Gooseneck Microphone
- 33.6 Fax/Voice Modem
- Mouse/pad
- Keyboard
- Platinum 10 CD Pack

$799.00

3 Year Warranty

14" **$129** 5+ 1024 x 768 NI

15" **$179** 5+ 1280 x 1024 NI

17" **$359** 5+ 1280 x 1024 NI

DXM Computer, Inc.
1 (800) dxm4usa • Fax 1(401) 434-0260
www.dxmusa.com
Complete spec's visit our web site

NetCom 3 Connectivity Without Clutter.

DESIGNED FOR COMPUTER EQUIPMENT AND ACCESSORIES, NETCOM3 IS BUILT TO MAXIMIZE WORKSPACE AND IMPROVE OPERATOR PRODUCTIVITY.

PARALAX

A product of
edp engineered data products INCORPORATED
Linking People and Technology.

CORPORATE HEADQUARTERS
2550 WEST MIDWAY BLVD.,
BROOMFIELD, COLORADO 80020
TEL: 303/465-2800
SALES LINE: 800/4321-EDP
SALES FAX: 800/EDP-3490

EDP EUROPE LTD.
43 REDHILLS ROAD,
SOUTH WOODHAM FERRERS,
CHELMSFORD; ESSEX CM35UL
TEL: (44) 1245-322380
FAX: (44) 1245-323484

WEB SITE: WWW.EDP-USA.COM

SPOOFED!

Attention Mail and System Administrators

As a way to distribute "spam mail," illicit direct e-mailing companies are using SMTP Mail servers at corporations and ISPs as the primary distribution system for their voluminous mail. Typically, the attack involves the spam agent opening an end user account at a small unsuspecting ISP, and then using a known open e-mail server elsewhere on the net as the distribution device.

Most companies are unaware that their systems have been used until they receive complaints from recipients, or from ISPs that have been mail-bombed with the spam.

Computerworld is in the process of collecting information about potential transgressions by these spam mailers. Companies that may have had their e-mail servers utilized in this manner are invited to work with us to put an end to this practice. To that end, we are collecting as much information as possible to help provide evidence for potential legal action.

We need the following information to be successful in this effort: The date and time that your server may have been used, any log files that show the usage, e-mail responses from aggrieved parties that received the spam, and any information that shows the originating entity. In addition, if you can determine any financial losses or direct impacts that may be attributed to this activity, an estimate should be provided.

The information may be forwarded via e-mail to **spoofed@computerworld.com,** or faxed to **(508) 270-1111.** Please provide a return e-mail message for future correspondence. We will be building an e-mail list that will be used solely for the purposes of sharing this information with all affected parties.

NEED HELP WITH NT?

Managing Windows NT environments is Transtech's core competency. Whether you're...**migrating from Netware/UNIX...facing NT Administration issues or ...deploying NT Web Servers,**

NT Admin. Services
ADMI NT EAM
1.888.NT.ADMIN

Transtech has the best nationwide team of NT experts in the business. Our Microsoft certified NT experts specialize in providing onsite NT Administration Services.

Microsoft SOLUTION PROVIDER

TransTech making IT happen
AN INC. 500 COMPANY

www.trans-tech.com ntadmin@trans-tech.com • 1.888.682.3646 ext. 239

OUR admiNTeam IS THE BEST IN THE BUSINESS!

Year 2000 Problem

We can help to find a solution

PLATFORMS: IBM Mainframes, IBM Compatible PCs.
PROGRAMMING LANGUAGES: ADABAS/NATURAL, COBOL, PL/1, Assembler.
TOOLS: Automatic and semi-automatic.
CAN DO: Impact analysis, source code conversion, testing.

100% accuracy for compliance with year 2000 guaranteed.

WE'LL BEAT ANY DEAL

AKVA SOFT, INC.
314 Commerce St. Alexandria, Virginia 22314
Tel: (703) 299-0804/05 E-mail: akvasoft@erols.com Facsimile: (703) 684-6971

For information on advertising, call 203-857-5100

Marketplace

CD-ROM PRODUCTION

Manufacturing and Packaging

Let us press, silk-screen, and package your 100+ CD order. Better quality and lower cost than recordable CD — and we do all the work!

1000 Retail-ready CDs
Our most popular package. Includes two color discs, four color glossy insert & tray cards, jewel case, and poly wrap. Complete turnkey! Call for details.

CATALOGIC
Your CD-ROM Production Source™
http://www.catalogic.com

Recordable CD

Do It Yourself...

CD-R Gold™ by Catalogic

74 min. discs	$299/100
Labels	$300/1000
Label Applicator	$69.95
Custom silk-screening	Call

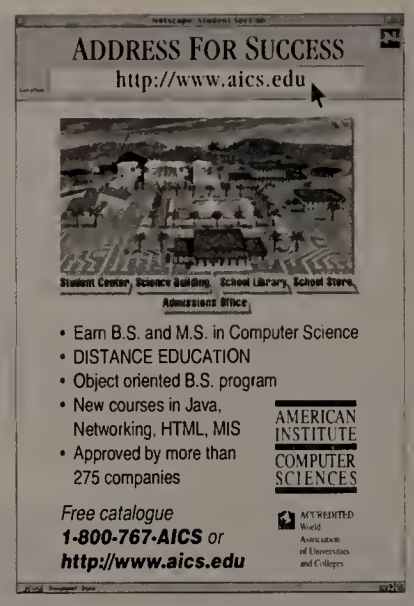
150 CD standalone duplicator
70Mb/min $6995

...Or Let Us Do It For You

1 to 100+ CD-R dupes w/one color imprint.
48 hour turnaround. As low as $5.95/disc.

Call us: (800) 255-4020

Catalogic 935 Sierra Vista Ave Mtn View, CA 94043
Tel: 650-961-4649 (fax. 962-5333)
Email: sales@catalogic.com



GET NOTICED
PLACE AN AD IN COMPUTERWORLD MARKETPLACE
(203) 857-5125

Why Advertise in Card Decks?

Because they work!

Card Decks are one of the most cost-effective and powerful tools for marketing products and services. If you sell IT products and services the Computerworld Card Deck can help you by:

- Providing direct access to the desks of more than 145,000 paid Computerworld subscribers
- Encouraging quick, measurable response via the business reply card format, as well as toll-free phone and fax numbers
- Generating the highest quality leads at the lowest possible price
- Enhancing your company's visibility and building awareness of its products and services

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

For information on how the Computerworld Card Deck can work for you call today!
Norma Tamburrino • National Accounts Director • (800)252-4821, ext. 409

OFFICIAL RULES - NO PURCHASE, PAYMENT OR CONTRIBUTION NECESSARY - To enter the Sweepstakes outlined below, follow all entry instructions published in this offer. Your entry must be received by the date specified elsewhere in this offer or by 1/15/98, whichever is sooner.

Super Prize Sweepstakes - Winners will be selected in random drawings from all eligible entries received. Early Bird winner will be selected in a separate drawing from among all eligible entries. Sweepstakes begins 9/3/96. Drawings will be conducted on or about 4/30/98 by Venture Associates, Inc., an independent judging organization whose decisions are final. Drawing will be held at 1040 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE Different creative presentations of the sweepstakes may present different prize choices. Values of a given prize level will be approximately the same. All prize winners will have the option of selecting any prize offered at level won. Number, estimated maximum retail value and odds of winning each prize are as follows: 1 Grand Prize - $25,000 (or cash alternative of $25,000); 1 First Prize - $2,000; 1 Second Prize - $1,000; 50 Third Prizes - $80; 1,000 Fourth Prizes - $65 each; 1 Early Bird Prize - $5,000. Total prize value: $102,000.00. Certain creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize, if the Early Bird Prize is presented in your offer, your entry must be received by the Early Bird date specified elsewhere in this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes will not exceed 300 million. All Super Prize Sweepstakes prizes will be awarded.

Automobile, boat/trailer prizes must be picked up at local dealer. All other merchandise prizes will be shipped to winner. Boat/trailer and/or automobile title, tags, license and registration fees are winner's responsibility as are any other incidental expenses not specified in the offer. Trip prizes subject to availability and must be completed within 12 months of date awarded. Actual values of trips depend on location of winners and fares at time of departure. Certain restrictions and blackout dates may apply. If a trip prize is won by a minor, minor must be accompanied by a parent or legal guardian. Winner's traveling companion will be required to sign a release of liability prior to departure. Trip prizes are on a space available basis and do not include personal purchases or incidentals. No substitution of prizes, except sponsor reserves the right to substitute a prize of equal or greater value in the event an advertised prize is unavailable.

For winners list (available after 6/30/98) send self-addressed, stamped envelope by 1/15/98 to: Super Prize Winners, P. O. Box 9193, Medford, NY 11763-9193.

THE FOLLOWING APPLIES TO THE SWEEPSTAKES ABOVE - No purchase, payment or contribution necessary to enter or win. No photocopied or mechanically reproduced entries will be accepted. Not responsible for technical malfunctions, failure of computer, telephone equipment or software, inaccurate transmission of entry information or for lost, late, misdirected, damaged, incomplete, illegible or postage-due mail. All entries become the property of sponsors and none will be returned.

Winner notification will be by mail. A winner may be required to sign and return an Affidavit of Eligibility/Liability/Publicity Release within 14 days of date printed on notification or he/she will be disqualified. Any prize/prize notification returned as undeliverable will result in disqualification. If a major prize is won by a minor, it will be awarded to parent or legal guardian and the Affidavit of Eligibility and Release must be signed by the parent or legal guardian. Except where prohibited by law, winners consent to the use of their names, hometowns, likenesses and photographs for advertising and publicity without additional compensation.

Sweepstakes is open to legal residents of the U. S., Canada and Europe (in those areas where made available) who have received the offer. In the event that the designated recipient of the offer has moved, the offer may not be valid in the state, country or province to which the offer has been forwarded. Void in Puerto Rico and where prohibited by law. All federal, state, provincial and local laws and regulations apply.

All prize values are in U. S. currency. No transfer of prize permitted. A winner is responsible for all taxes on his/her prize.

Canadian residents, in order to win, must first correctly answer a time-limited skill testing question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Regie des alcools, des courses et des jeux.

Sweepstakes may be presented in different creative presentations by different organizations. Ventura Associates, Inc., 1040 Avenue of the Americas, New York, NY 10018, the independent judging organization has provided all prizes at no charge. Ventura Associates, Inc., reserves the right to withdraw the promotion if it becomes technically corrupted.

Employees of Sweepstakes Administrator, presenting organizations, their advertising agencies and promotional companies involved in this promotion and their families, agents, successors and assignees are ineligible to participate in the promotion and shall not be eligible for any prizes covered herein. The parties hereto acknowledge that SCA is not liable for any prize awards payable to promotion participants in violation of this term.

COMPUTERWORLD TECHNOTOYS WEEKLY SWEEPSTAKES OFFICIAL RULES: No purchase necessary. Complete official entry form or print all entry information on plain paper, including this week's prize and fax to: (800)898-2299. Incomplete entries not eligible. Sweepstakes begins 12:01 am (EST) Monday (the date of the issue). All entries must arrive by fax no later than 11:59 am Monday of the following week. The issue date can be found at the top of most pages of this magazine. Sponsor not responsible for telephone or fax equipment failure or delayed transmission. All entries become sponsor's property & will not be returned.

Winner will be determined in a random drawing on or about 5:00 pm (EST) the Monday following the issue date. You need not be present to win. The prize (and its retail value) detailed with the entry form is guaranteed to be awarded & delivered to winner approx. 30 days from drawing date. If notification letter or prize is returned as undeliverable, it will be awarded to an alternate winner at random. No prize substitutions except due to unavailability, in which case a prize of equal value will be awarded. Prize not transferable or redeemable for cash. All taxes on prize are winner's responsibility. Acceptance of prize constitutes permission (except where prohibited) to use winner's name, hometown & likeness for promotional purposes without additional compensation.

Sweepstakes is open to legal US residents, 18 & older. Odds of winning determined by total number of entries received. Est. distribution: 150,448. Sponsor: Computerworld, Inc. 500 Old Connecticut Path, Framingham, MA 01701. Employees of Computerworld, Inc., its affiliates, subsidiaries, retailers, advertising & promotion agencies & immediate families of each not eligible. All federal, state & local laws & regulations apply. Void in Puerto Rico & where prohibited by law.

For winners list (available within 4 weeks of the drawing), send a SASE to: Sweepstakes Winners, Computerworld TechnoToys Sweepstakes, 500 Old Connecticut Path, Framingham, MA 01701.

ADVERTISERS INDEX

Acer America 82
http://www.acer.com

Allegiant Legacy Solutions 48A*
http://www.allgnt.com

AT & T 29
http://www.att.com/easycommerce

BMC Software 65, 67
http://www.bmc.com

Candle 56
http://www.candle.com

Cisco 45
http://www.cisco.com

Comdisco 84
http://www.comdisco.com

Compaq Computer Corp. 13, 18-19, 53
http://www.compaq.com

Computer Associates 5
http://www.cai.com

Cyber-Guard 32
http://www.cyberguardcorp.com

Dell 30-31
http://www.dell.com

Digital Equipment Corp. 22-23
http://www.digital.com

Fabrik 10
http://www.fabrik.com

Forté 11
http://www.forte.com

Gateway 2000 . . . . . G1-G3
http://www.gateway.com

Hewlett-Packard 15
http://www.hp.com

Hyperion 115
http://www.hysoft.com

IBM 46, 58-59, 68B*
http://www.ibm.com

Imation 73
http://www.imation.com

Integrix 48B*
http://www.integrix.com

International Data Corp. 40
http://www.idg.net

Intersystems Corp 64
http://www.intersys.com

Iona Technologies 25
http://www.iona.com

Kingston Technology C4
http://www.kingston.com

Lawson Software 20
http://www.lawson.com
(800)477-1357

Lucent Technologies 62
http://www.lucent.com

McAfee 66
http://www.mcafee.com

MCI 113
http://www.mci.com

MHA Event 17

Micro Focus 9
http://www.microfocus.com
(800) 872-6265

Micron C3
http://www.micron.com

Microsoft 40/41, 50
http://www.microsoft.com

NEC Technologies 42
http://www.nec.com

Novell 79-81
http://www.novell.com

Oracle Corp. 7
http://www.oracle.com

SAP America 109
http://www.sap.com

SAS Institute 76/77, 111
http://www.sas.com

Softbank 54

Sybase 55
http://www.sybase.com

3Com 26-27
http://www.3com.com

Tandem 38-39
http://www.tandem.com

Viasoft 21
http://www.viasoft.com

Xerox 34-35
http://www.xerox.com

* Var Demo Select Edition

This index is provided as an additional service.The publisher does not assume any liability for errors or omissions.

HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:
Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.
Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription
All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: ☐ Home ☐ Business

Name
Company
Address
City State Zip

Other Questions and Problems
It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (614) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address – COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

Name
Title
Company
Address
City State Zip

SALES OFFICES

COMPUTERWORLD HEADQUARTERS: 500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

Senior Vice President/Publisher
Peter C. Weedfald

Vice President/Custom Publications
Elaine R. Offenbach

Vice President/Marketing
Cynthia L. Ahart

Regional Vice President North/Central
Sherry Driscoll

Regional Manager East
Christopher E. Thomas

Vice President/ Associate Publisher West
Bill Howard

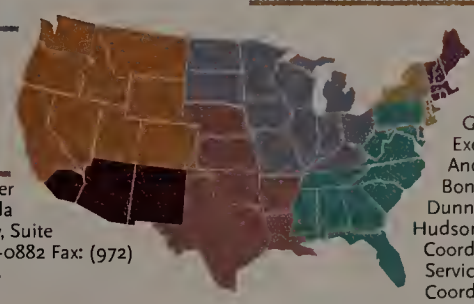
National Director Business Development
John Gordon

NORTH/CENTRAL

Director: Isabelle Kane; Senior District Manager: Kim DiMascio; District Manager: Laurie Marinone; Account Executive: Dianne McNeil; Sales Associates: Karen Beasley, Cheryl Stratton, 500 Old Connecticut Path, Framingham,MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

Sr. Account Executive: Laurie Gomes; Sales Associate: Jasmine Huffman, 875 N. Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 Fax: (312) 943-2214

Senior District Manager: Jennifer Hedges; Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TDD: (800) 822-4918



EAST

Director: Fred LoSapio; Senior District Manager: Walter Hodge; District Managers: Kim Bailey, John Bosso; Account Executive: Maureen Grady; Sales & Office Associate: Susan Kusnic; Sales Associates: Jean Deliarobba, Erica Driscoll, Valerie Lusczek, John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

Senior District Manager: Walter Hodge; Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

WEST

Senior District Manager: Ernie Chamberlain; District Managers: Aimee Einstein, Angela Flores, Denyce Kehoe; Sr. Account Executive: Claude Garbarino; Account Executives: Larisa Gagainis, Andrea Zurek; Sales Associates: Bonnie Jo Bouchard, James Dunn, Alicia Giovannini, Amy Hudson, Nipool Patel; Operations Coordinator: Emmie Hung; Office Services: Jessica Abude; Sales Coordinator: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (650) 347-0555 Fax: (650) 347-8312 TDD: (800) 900-3179

Senior District Manager: Cindy Wager; Sales Associate: Pat Duhl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 Fax: (714) 476-8724

ADVERTISING OPERATIONS PRINT & ON-LINE

Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508) 879-0700 Fax: (508) 879-0446

CUSTOM PUBLICATIONS

Boston: Director of Publishing Services/Carolyn Medeiros; Project Coordinator/Heidi Broadley; Managing Editor/Peter Bochner; Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax: (508) 875-6310

San Francisco: Vice President Custom Publications/Elaine R. Offenbach; Sales Operations Coordinator/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 Fax: (415) 347-8312

East: Director/Barry Cheney; Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289

MARKETPLACE ADVERTISING

Sales Manager/Pat Fales, 50 Washington St., South Norwalk, CT 06854 (203) 857-5125 Fax: (203) 838-1425

COMPUTERWORLD INFORMATION MANAGEMENT GROUP

Vice President/General Manager: Richard Mikita

Computerworld VAR Database: Carol Mullen/National Sales Manager; Account Executive/Sean Weglage, (508) 879-0700 Fax: (508) 879-0184

Computerworld Buyers Database East: (508) 879-0700 Fax: (508) 879-0184

Computerworld Buyers Database West: (415) 347-0555 Fax (415) 347-8312

DIRECT RESPONSE CARDS

500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

National Accounts Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

BUSINESS DEVELOPMENT

National Director/John S. Gordon; 990 Hammond Dr., Ste. 600, Atlanta, GA 30328 (770) 668-5414 Fax (770) 394-6354

RECRUITMENT ADVERTISING SALES OFFICES

Vice President Recruitment Advertising/John Corrigan; Marketing Director/Derek E. Hulitzky; Operations Director/ Cynthia Delany, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England & Upstate New York: Regional Manager/Nancy Percival, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (800) 343-6474, Sr. Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Jay Savell, 961 Marcon Blvd., Suite 409, Allentown, PA 18103 (610) 264-7700, Sr. Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

South Atlantic: Regional Manager/Katie Kress-Taplett, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sales Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executive/Nick Burke (800) 343-6474 TDD: (800) 227-9437

Northwest: Regional Manager/Christopher Glenn, 246 Casitas Ave., San Francisco, CA 94127 (415) 665-2443, Account Executive/Fabiola Franz, (800) 343-6474

West: Regional Manager/Ellen Cross, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Jeff Yoke (800) 343-6474 TDD: (800) 203-5867

Internet Careers Site: Jennifer Arispe, Sales Associate, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

CAREER AGENT

Director of Partner Programs/Kaye Sharborough, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 Fax: (415) 347-8312

MARKETING: *Vice President, Marketing*/Cynthia L. Ahart, *Marketing Director*/Elizabeth Phillips, *Manager, Trade Show & Events*/Audrey Abbott, *Sales Development Manager*/Susan Thaxter, *Marketing Communications Project Manager*/Karen Sambrook, *Marketing Manager (Events)*/Stuart C. Dale, *Marketing Specialist*/Emily Dinneen
CIRCULATION: *Vice President Circulation*/Maureen Burke **PRODUCTION:** *Production Director*/Christopher P. Cuoco, *Production Manager*/Beverly Wolff **DISTRIBUTION:** *Distribution Manager*/Bob Wescott, *Traffic Manager*/Pat Walker

COMPUTERWORLD

President
Michael R. Rogers

Vice President/Editor
Paul Gillin

Senior Vice President/Finance
Matthew C. Smith

Senior Vice President/Consumer Marketing
Gail Odeneal

Vice President/ Recruitment Advertising
John Corrigan

Vice President of IS
Richard Broughton

Vice President/General Manager New Media & Information Mgmt
Richard Mikita

Vice President/ Human Resources
Susan C. Perry

INTERNATIONAL DATA GROUP

Chairman of the Board, Patrick J. McGovern **President,** Kelly Conlin **Chief Operating Officer,** Jim Casella

IDG Computerworld is a publication of International Data Group, the world's largest publisher of computer related information and the leading global provider of information services on information technology International Data Group publishes over 275 computer publications in over 75 countries. Sixty million people read one or more International Data Group publications each month.

STOCK TICKER

The Week in Stocks

Gainers

PERCENT

SCO Inc.	16.7
Electronic Data Systems Corp.(L)	11.7
Micrografx Inc.	9.5
Amazon.com(H)	7.4
Adaptec Inc.	6.1
Checkpoint Software Technologies,	5.8
Symantec Corp.	4.5
Oracle Corp.	4.4

DOLLAR

Amazon.com(H)	4.25
Electronic Data Systems Corp.(L)	4.06
Adaptec Inc.	2.75
Cisco Systems Inc.	2.44
Checkpoint Software Technologies,	2.38
Oracle Corp.	1.50
Hyperion Software Corp.(H)	1.06
Symantec Corp.	0.94

Losers

PERCENT

MathSoft	-24.8
Corel Corp.(L)	-23.0
Data General Corp.	-21.7
NetManage Inc.	-20.7
Ascend Communications(L)	-18.7
Radius Inc.	-17.6
FTP Software Inc.(L)	-17.5
Retix	-17.0

DOLLAR

Dell Computer Corp.	-12.50
America On-Line	-10.63
Xerox Corp.	-6.88
Ascend Communications(L)	-6.25
Texas Instruments	-6.13
Microsoft Corp.	-6.06
Compaq Computer Corp.	-5.81
Autodesk Inc.	-5.75

INDUSTRY ALMANAC

Internet stocks inch back

The technology stocks that fared best in last week's market roller coaster were heavyweights such as IBM and Microsoft Corp. They managed to recover much, but not all, of what they lost. But online services and Internet-based stocks are having a tougher time climbing back to preplunge price levels.

"In this sort of market correction, the untested, unseasoned stocks — despite their terrific potential — generally are hurt more than [the] more traditional stocks," said Tony Blenk, an analyst at Everen Securities, Inc. in Chicago.

Analysts say the slide in Asian markets and unease here about valuations triggered last Monday's sell-off.

By Tuesday, the mood had changed. Investors looked at individual companies, saw unreasonably low prices and began buying. There also was a realization that problems in the Asian market weren't going to materially affect U.S. companies, said Gary Helmig, an analyst at Soundview Financial Corp. in Stamford, Conn.

IBM, in Armonk, N.Y., hit a low of $90 per share Monday; the stock price had been at $105 several days earlier. But IBM regained about two-thirds of the loss Tuesday.

Microsoft, in Redmond, Wash., was selling at more than $135 per share days before the drop. It fell to just under $129 Monday but rose to $131 by the end of Tuesday.

It was a different story for Internet stocks. Yahoo, Inc., in Santa Clara, Calif., was selling shares at more than $52 per week prior to the drop. It hit a low of $38 Monday but moved up to 43 and 7/8 points by Tuesday's close. — Patrick Thibodeau

WEALTHY 'LOSERS'

Paper losses incurred by industry execs last Monday (some of which was restored by Tuesday)

Bill Gates	CEO, Microsoft	$2.079B
Larry Ellison	CEO, Oracle	$674.06M
Gordon Moore	Chairman and co-founder, Intel	$518.88M
Scott McNealy	CEO, Sun	$32.1M
Steve Case	Chairman and CEO, America Online	$31.87M
Jim Barksdale	CEO, Netscape	$12.91M
Lou Gerstner	CEO, IBM	$4.8M

Methndology: *Computerworld* used the Forbes ASAP "Technology's Very Richest" for calculating percent of shares; the closing price on 10/24 vs. closing price on 10/27; and outstanding shares as of 9/29 quarter close.

Exch	52-Week	Range		Oct. 31 2 PM	Wk Net Change	Wk Pct Change
Communications and Network Services					**OFF 7.45%**	
COMS	81.38	24.00	3 COM Corp	41 44	-4 56	-9.9
AIT	71.75	54.25	AMERITECH Corp.	64 69	-2.44	-3.6
ASND	80.25	26 25	Ascend Communications (L)	27.13	-6.25	-18.7
T	50 94	30 75	AT & T (H)	48.25	-1.69	-3.4
BNYN	6.50	1.19	Banyan Systems Inc.	3.31	-0.56	-14 5
BAY	41 88	15.38	Bay Networks Inc	31.00	-1 88	-5.7
BEL	85.25	56.75	Bell Atlantic Corp.	79.94	-2.63	-3 2
BLS	50.00	36.75	Bellsouth Corp. (H)	46.19	-2 31	-4.8
BRKT	34.50	9.25	Brooktrout Technology	14.00	-0.81	-5.5
CS	46 50	25.81	Cabletron Systems (L)	28.00	-2.44	-8.0
CGRM	21.88	8.63	Centigram Communications	16.25	-1.44	-8 1
CSCO	85.25	45.25	Cisco Systems Inc.	81.75	2.44	3.1
CMNT	7.00	3.31	Computer Network Tech.	4.88	-0 13	-2.5
DIGI	32.75	12.63	DSC Communications	23.91	-3.16	-11.7
FORE	43.50	10.00	FORE Systems Inc.	16.13	-1.69	-9.5
GDC	12.38	5.38	General Datacomm Inds.	6.13	-0.44	-6.7
GSX	53.00	36.13	General Signal Networks	40.00	-0.19	-0.5
GTE	52.25	40.50	GTE Corp.	42.38	-2.75	-6.1
LU	90.75	44.75	Lucent Tech.	81.63	-0.69	-0.8
MADGF	16.13	4.50	Madge Networks NV	6.00	-0.88	-12.7
MCIC	43.38	24.38	MCI Communications Corp.	35.94	-1.88	-5.0
NETM	8.50	2.50	NetManage Inc.	3 47	-0.91	-20.7
NTRX	7.00	1.44	Netrix Corp.	2.00	-0.25	-11 1
NCDI	16 25	6.00	Network Computing Devices	8.63	-0.56	-6.1
NWK	22.38	11.25	Network Equipment Tech	16.94	-0.25	-1.5
NETG	30.25	11.13	Network General	20.25	-1.06	-5 0
NN	69.38	26.50	Newbridge Networks Corp.	52.75	-3.00	-5.4
NT	113.88	57.75	Northern Telecom Ltd.	88.31	-4.94	-5.3
NOVL	13.00	6.28	Novell Inc.	8.31	-0.75	-8.3
ODSI	19.25	9.75	Optical Data Systems Inc.	9.88	-1.13	-10.2
PCTL	33.50	7.94	Picturetel Corp. (L)	9.06	-0.81	-8.2
PTON	4.25	1.31	Proteon Inc.	1.81	-0.25	-12.1
RACO	5.75	1.00	Racotek Inc.	1.25	-0.03	-2.4
RETX	9.25	3.38	Retix	5.19	-1.06	-17.0
SBC	66.25	47.63	SBC Communications (H)	63.25	-1.56	-2.4
SFA	24.94	13.25	Scientific Atlanta Inc.	18.25	-0.81	-4.3
SHVA	56.13	8.25	Shiva Corp.	10.56	-1.44	-12.0
FON	57.00	37.50	Sprint Corp.	52.25	-3.63	-6.5
SMSC	18.13	8.25	Standard Microsystems Corp.	11.50	-1.81	-13.6
USW	41.13	29.25	U S West Inc. (H)	39.63	-0.56	-1.4
XIRC	31.13	7.50	Xircom	10.19	-0.81	-7.4
XYLN	44.00	12.38	Xylan Corp.	16.00	-2.63	-14.1
PCs and Workstations					**OFF 7.05%**	
AAPL	29.56	12.75	Apple Computer Inc.	17.06	-0.13	-0.7
CPQ	79.56	20.50	Compaq Computer Corp.	63.56	-5.81	-8.4
DELL	103.88	19.00	Dell Computer Corp.	80.06	-12.50	-13.5
GTW	46.25	19.38	Gateway 2000 Inc.	28.50	-1.94	-6.4
HWP	72.94	42.75	Hewlett Packard Co.	61.44	-2.44	-3.8
MUEI	25.38	12.63	Micron International Inc.	13.94	-1.69	-10.8
NIPNY	74.00	53.63	NEC America	55.13	-3.19	-5.5
SGI	30.31	12.63	Silicon Graphics	14.56	-0.94	-6.0
SUNW	53.31	25.50	Sun Microsystems Inc.	34.38	-3.13	-8.3
Large Systems					**OFF 5.16%**	
DGN	37.94	13.63	Data General Corp.	19.13	-5.31	-21.7
DEC	52.31	25.00	Digital Equipment Corp.	50.19	0.19	0.4
IBM	109.44	62.63	IBM	97.88	-0.81	-0.8
MDCD	8.13	2.88	Meridian Data Inc.	4.56	-0.19	-3.9
PRCM	20.13	9.00	ProCom Technology, Inc.	15.38	-0.50	-3.1
SQNT	31.25	14.13	Sequent Computer Sys.	20.31	-1.75	-7.9
TEXM	3.88	2.06	Sequoia Systems Inc.	3.31	0.06	1.9
SRA	60.75	21.25	Stratus Computer Inc.	34.25	-2.13	-5.8
UIS	16.50	5.75	Unisys Corp.	13.38	-0.75	-5.3
Software					**OFF 4.39%**	
ADBE	53.13	32.50	Adobe Systems Inc.	47.88	-1.38	-2.8
AMSWA	15.63	4.63	American Software Inc.	11.44	-0.06	-0.5
APLX	26.75	3.13	Applix Inc.	7.94	-0.31	-3.8
ARSW	53.25	17.00	Arbor Software	35.38	-3.63	-9.3
ADSK	51.13	21.00	Autodesk Inc.	36.88	-5.75	-13.5
BGSS	38.00	21.50	BGS Systems Inc.	32.13	0.75	2.4
BMCS	69.50	39.63	BMC Software Inc.	59.88	-0.88	-1.4
BOOL	35.25	18.75	Boole and Babbage	28.94	-2.44	-7.8
BORL	11.50	4 75	Borland Int'l Inc.	9.25	-0.88	-8.6
BOBJY	16.75	6.63	Business Objects	13.00	-0.50	-3.7
CAYN	6.25	2.00	Cayenne Software Inc.	3.06	0.06	2.1
CNTR	5.88	1.13	Centura Software	1.91	-0.03	-1.6
CHKPF	44.50	15.63	Checkpoint Software Technologies	43.00	2.38	5.8
COGNF	39.50	20.00	Cognos Inc. (L)	22.38	-0.63	-2.7
CA	81.94	37.25	Computer Associates	74 38	-2.88	-3.7
CVN	10.00	1.94	Computervision Corp.	2.50	0.06	2.6
CPWR	73.13	24.13	Compuware Corp.	64.88	-1.25	-1.9
CSRE	18.88	6.50	Comshare Inc. (L)	6.88	-0.56	-7.6
COSFF	9.69	2.66	Corel Corp. (L)	2.94	-0.88	-23.0
DWTI	6.63	2.25	Dataware Technologies Inc.	3.88	0.00	0.0
FILE	36.50	9.50	Filenet Corp.	22.31	-0.69	-3.0
FRTE	41.50	7.25	Forte Software	11.63	-0.75	-6.1
FTPS	8 63	2.56	FTP Software Inc. (L)	2.94	-0.63	-17.5
HUMCF	54.25	22.00	Hummingbird Comm. Ltd.	35 25	-1.00	-2.8
HYSW	37 38	13.00	Hyperion Software Corp. (H)	36.19	1.06	3 0
IRIC	20.00	11.13	Information Resources (H)	16.50	-3.25	-16.5
IFMXE	27.63	5.63	Informix Corp. (L)	6.59	-0.16	-2.3
INGR	14.19	6.25	Intergraph Corp.	10.50	-1.56	-13 0
LEAF	3.69	0.81	Interleaf Inc.	3.13	0 13	4 2
ISLI	18.50	6.25	Intersolv Inc.	12.63	-1.69	-11.8
INTU	40.25	20.88	Intuit Inc.	32.50	-0.75	-2.3
TLC	22.75	5.50	Learning Co. (The)	19.25	0.75	4 1
LGWX	12.88	4 13	Logic Works	9.50	-1.50	-13 6
MAPS	12.63	7.88	MapInfo Corp.	8.88	-0.38	-4 1
MATH	5.13	2 19	MathSoft	3.31	-1 09	-24 8
MCAF	78 50	36 50	McAfee Associates	50.63	-1.75	-3.3
MENT	13.13	6.50	Mentor Graphics	10.94	0.09	0.9
MIFGY	39.13	12.75	Micro Focus	34 38	-2.38	-6.5
MGXI	9.00	4.00	Micrografx Inc.	8.63	0.75	9 5
MSFT	150.75	67.50	Microsoft Corp.	130.13	-6 06	-4 5
OBJS	3.13	0.88	ObjectShare, Inc.	0.97	-0.09	-8 8
ORCL	42.13	22.50	Oracle Corp	35.75	1.50	4 4
PMTC	64 25	37.50	Parametric Technology	44 38	-5.38	-10 8
PSFT	66.38	30.63	Peoplesoft	62.88	0 81	1.3
PTEC	19.75	11.00	Phoenix Technologies	15 50	-1 38	8 1
PSQL	13.75	6.50	Platinum Software	10.38	0.25	2 5
PLAT	28 88	10.25	Platinum Technology	24.00	-1 44	-5.7
PRGS	25.25	12.63	Progress Software Corp.	21 50	-1 56	-6 8
RNBO	28.13	13 75	Rainbow Technologies Inc	24 63	1 63	6 2
REDB	26 50	5.00	Red Brick Systems Inc	8 06	-0 81	-9 2
ROSS	9 75	1.75	Ross Systems, Inc	3 75	-0 13	-3.2
SAPE	61 00	30 00	Sapient Corp	53 50	0.50	0 9
SCOC	8 63	3 13	SCO Inc	6 13	0.88	16.7
SDTI	44.38	21.00	Security Dynamics Tech	34 00	-2.00	-5 6
SOTA	17 63	8 88	State of the Art	15 50	-1.13	-6.8
SSW	36.75	27.25	Sterling Software Inc.	34 50	-1 56	-4.3
SDRC	30.00	16.63	Struct Dynamics Research (L)	19 44	-0.69	-3.4
SYBS	23.63	12 13	Sybase Inc.	16.69	-2 38	-12.5
SYMC	25 75	9 88	Symantec Corp	21.75	0.94	4.5
SNPS	48.75	21.75	SynOpsys	38.50	-1 00	-2.5
SSAX	17 63	3.88	System Software Assoc.	11 50	-1 00	-8 0
SYSF	29 75	6.00	Systemsoft Corp (L)	8 00	-0 06	-0 8
TRUV	5.19	1.50	Truevision Corp	3.88	-0.75	-16.2
VIEW	27.00	9.25	ViewLogic Systems	24.63	-0 63	-2 5
VMRK	11 75	5 75	VMark Software Inc.	8.00	-0.88	9 9
WALK	18.25	10 50	Walker Interactive Systems	13 63	-0 63	-4 4
WALL	29.13	12.75	Wall Data Inc.	16 25	-0.25	-1.5
WANG	25 00	16.00	Wang Laboratories Inc	23.00	-0 63	-2.6
Internet					**OFF 6.56%**	
AMZN	66.00	15.75	Amazon.com (H)	61 75	4 25	7.4
AOL	91.13	24 00	America On-Line	76.13	-10 63	12 2
ATHM	30.63	16 63	At Home Corp.	23.25	-2 13	-8 4
CSRV	14.56	8 63	Compuserve Corp	12.63	0 13	1.0
EDFY	22.13	8.88	Edify Corp.	17.13	-2.44	-12.5
XCIT	35.00	5.50	Excite, Inc.	24.69	-4 44	-15.2
SEEK	14 50	4.38	Infoseek Corp.	10.63	0.00	0.0
LCOS	42.00	9 50	Lycos Inc.	25.50	-3.38	-11 7
NETC	21 88	7.88	Netcom On-Line	19.00	-0.13	-0.7
NSCP	65.00	23.50	Netscape Comm Corp	32.81	-0 31	-0.9
OMKT	23 50	6.50	Open Market Inc.	11.25	-2 00	-15.1
PSIX	14.50	5.50	PSINet	8.38	0.13	1.5
QDEK	7.13	2.00	Quarterdeck Corp	2.31	-0.16	-6 3
RAPT	25.00	8.88	Raptor Systems	13 63	-2.38	-14 8
SCUR	13 25	4.75	Secure Computing Corp	12.13	-0.44	-3 5
SPYG	18.88	6.00	Spyglass Inc	8 94	-1.06	-10.6
YHOO	58.63	11.25	Yahoo! Inc.	43.50	-4 56	-9 5
Semiconductors					**OFF 4.78%**	
AMD	48.50	2.69	Advanced Micro Devices (L)	22.88	-3.38	-12.9
ADI	36.69	18 75	Analog Devices Inc.	30.19	-0 81	-2.6
CHPS	26.50	7.88	Chips and Technologies	15.63	0 00	0.0
CRUS	21.88	8.00	Cirrus Logic	14 50	-0.44	-2.9
CY	18.94	10.13	Cypress Semiconductor Corp. (L)	11.13	0.00	0.0
CYRX	35.00	16.88	Cyrix	28.88	-0.25	-0.9
INTC	102.00	51.88	Intel Corp.	77.06	-3 25	-4.0
LSCC	74.50	33.38	Lattice Semiconductor	50.13	-2.13	-4.1
LSI	46 88	18.63	LSI Logic Corp. (L)	21.63	-0.81	-3.6
MCRL	46.88	9.13	Micrel Semiconductor Inc.	35.25	-2.75	-7.2
MU	60.06	24.88	Micron Technology	26.50	-3.56	-11.9
MOT	90.50	44.13	Motorola Inc.	61.19	-2 44	-3.8
NSM	42.88	18.25	National Semiconductor	35.25	-0.50	-1.4
TXN	142 50	47.50	Texas Instruments	105.88	-6 13	-5.5
VLSI	38.69	14 88	VLSI Technology	30.38	-2 38	-7 3
XLNX	58.50	30.00	Xilinx (L)	34.50	-2 19	-6.0
ZLG	29.50	17.00	Zilog Inc.	19.00	-1.50	-7.3
Peripherals and Subsystems					**OFF 6.77%**	
ADPT	54.25	28.63	Adaptec Inc.	48.00	2.75	6.1
APCC	31.50	15.25	American Power Conversion	26.81	-2.69	-9 1
CREAF	28.00	5.63	Creative Technology Ltd.	25.25	-1.13	-4.3
RACE	24.50	6.25	Data Race Inc. (L)	6.50	-0.50	-7.1
DTM	12.50	7.38	Dataram Corp.	8.88	0.13	1.4
EMC	65.13	23.75	EMC Corp.	56.25	-2.88	-4.9
EMLX	21.25	14 13	Emulex Corp.	17.25	-1.00	-5 5
ESCC	35.88	20.25	Evans and Sutherland	29.75	-3.00	-9.2
EXBT	17.50	9.50	Exabyte	10.38	-0.63	-5.7
IISLF	2.63	0.94	Intelligent Info. Systems (L)	1.00	-0.13	-11.1
IOM	30.13	14.13	Iomega Corp.	26.63	-2.00	-7.0
IPLS	2.81	0.94	IPL Systems Inc.	1.94	-0.19	-8.8
KMAG	36.75	15.31	Komag Inc.	17.34	-1.69	-8 9
MTSI	34.88	16 75	Micro Touch Systems Inc.	24.06	-4.19	-14.8
MTIC	17.88	2.25	MTI Technology Corp.	14 38	-1.38	-8.7
PNCL	7.81	0.59	Pinnacle Micro Inc.	0.69	-0 09	-12.0
AQM	23.06	2.38	QMS Inc. (H)	2.88	-0.06	-2.1
QNTM	43.25	9.75	Quantum Corp.	31.00	-4.44	-12.5
RDUS	1.63	0.19	Radius Inc.	0.44	-0.09	-17 6
SEG	56.25	25.13	Seagate Technology (L)	27.13	-2.75	-9 2
SOS	19.63	8.94	Storage Computer Corp. (L)	10.13	0.25	2 5
STK	59.94	33.25	Storage Technology (H)	58.75	0.19	0.3
TEK	69.63	38.75	Textronix Inc.	59.06	-1.94	-3.2
WDC	54.75	23.38	Western Digital Corp.	30.25	-3.38	-10.0
XRX	88.00	44.63	Xerox Corp	79.88	-6.88	-7 9
Services					**OFF 3.72%**	
AMSY	37.13	15.75	American Mgmt. Systems	21.50	0 50	2 4
ANLY	46.75	21.25	Analysts Int'l (H)	45.00	-0 63	-1.4
AUD	53.13	26.56	Auto Data Processing	51.19	0.06	0 1
BDMI	28.63	19 75	BDM International Inc.	22.06	0.50	2.3
CATP	40.75	21.25	Cambridge Tech. Partners	37.38	1.63	-4.2
CEN	50.50	29.50	Ceridian Corp.	39.00	-0 63	-1.6
CDO	33.50	18.38	Comdisco Inc. (H)	31.75	-1.50	-4.5
CPU	37.25	13.25	CompUSA Inc.	33 13	-1.94	-5.5
CHRZ	45.63	16.75	Computer Horizons	30.00	-1 75	-5 5
CSC	86.50	57.88	Computer Sciences	70.50	-2.50	-3.4
TSK	49 38	16.63	Computer Task Group	27.94	-2.81	-9 1
EGGS	11.13	3.63	Egghead Discount Software	9.38	-0.31	-3.2
EDS	49 63	29.56	Electronic Data Systems Corp (L)	38.75	4 06	11.7
ICO	40.63	19 75	Inacom Corp	30 94	-4.19	-11.9
INEL	9 13	2.25	Intelligent Electronics	5 06	0.13	2 5
KEA	39 00	11.50	Keane Inc.	30.13	-1.88	-5 9
MICA	29.75	12.31	Microage Inc.	23.06	-2 25	-8 9
PAYX	41.25	25 63	Paychex	37 94	-1.50	-3.8
PMS	64 94	34.75	Policy Management Sys.	62.06	-1 25	-2 0
REY	30.63	13.75	Reynolds and Reynolds	17.31	-1 56	-8.3
SCBI	22.25	10.75	SCB Computer Tech Inc.	18.38	-1 63	-8 1
SEIC	44.50	18.75	SEI Corp	42.38	0.00	0 0
SMS	61.75	36.75	Shared Medical Systems	54.38	-0.31	-0.6
SSPE	33.50	10.00	Software Spectrum Inc	13.25	-2.00	-13.1
SDS	27.13	18.50	Sungard Data Systems	23.81	-1 50	-5 9
VST	28.25	6.50	VanStar Corp	12 88	1 25	-8 8

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International, Inc., Boulder, Colo.
This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and Computerworld assume no liability for inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

SAP, R/3, TeamSAP, AcceleratedSAP, and the SAP and AcceleratedSAP logos are the registered or unregistered trademarks of SAP AG; *A Better Return On Information* is a service mark of SAP AG. ©1997 SAP America, Inc. All rights reserved

AcceleratedSAP. Five quick steps to a better ROI. Get the most powerful business software in the world the fastest way possible with AcceleratedSAP.™ It's a new program that allows you and your TeamSAP™ consultants to follow a proven five-step path to R/3™ implementation. From Project Preparation through Go Live, tools and templates minimize delays and unplanned costs. Even after you're up and running, we're there to support you every step of the way. Already, companies using AcceleratedSAP have gone live in less than six months. So with the returns in on AcceleratedSAP, now it's time for you to get your better return on information. For more information, visit us at http://www.sap.com or call 1-800-283-1SAP.

TeamSAP is a new initiative of people, processes and products representing SAP's total commitment to customer success.

A Better Return On Information.℠

How to contact Computerworld

TELEPHONE/FAX

Main phone number ..... (508) 879-0700
All editors unless otherwise noted below
Main fax number..... (508) 875-8931
24-hour news tip line ..... (508) 820-8555

E-MAIL

Our Web address is www.computerworld.com.
All staff members can be reached via E-mail on the Internet using the form:
firstname_lastname@cw.com.
All IDG News Service correspondents can be reached using the form:
firstname_lastname@idg.com.

LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:
letters@cw.com.
Please include your address and telephone number.

MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

SUBSCRIPTION/BACK ISSUES

Phone ..... (800) 552-4431
E-mail ..... circulation@cw.com.
Back Issues ..... (508) 820-8129

REPRINTS/PERMISSIONS

Phone ..... Michelle Olk, (800) 217-7874

CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Editor in Chief Paul Gillin (508) 620-7724
Executive Editor Maryfran Johnson (508) 820-8179

Department Editors/News

News Editor Patricia Keefe (508) 820-8183
Sections Editor Kevin Fogarty (508) 820-8246
Assistant News Editor Neal Weinberg (508) 820-8177
Assistant News Editor Mitch Betts (202) 347-6718
Assistant Sections Editor Michael Goldberg (508) 620-7789
Online Editor Johanna Ambrosio (508) 820-8553
Online News Editor Judith H. Bernstein (516) 266-2863

Senior Editors/News

Groupware, E-mail, messaging Barb Cole-Gomolski (760) 728-8858
LANs, operating systems Laura DiDio (508) 820-8182
Network/systems management Patrick Dryden (817) 924-5485
Application development Sharon Gaudin (508) 820-8122
IS management Thomas Hoffman (914) 988-9630
IS careers, social issues Julia King (610) 532-7599
Investigative reports Kim S. Nash (773) 871-3035
Mainframes, high-end storage Tim Ouellette (508) 820-8215
Databases Craig Stedman (508) 820-8120
Midrange hardware, Unix, systems integration Jaikumar Vijayan (508) 820-8220
Internetworking Bob Wallace (508) 820-8214
Intranets Carol Sliwa (508) 628-4731

Senior Writers/News

@Computerworld Stewart Deck (508) 820-8155
PCs, servers, net computers April Jacobs (508) 820-8121
Security, federal government Sharon Machlis (508) 820-8231

Staff Writers/News

New products, multimedia, low-end storage Nancy Dillon (650) 548-5538
Mobile computing Kim Girard (650) 548-5515
Telecommunications Matt Hamblen (508) 820-8567
@Computerworld Patrick Thibodeau (508) 820-8143
PC software, application development Gordon Mah Ung (650) 548-5512
Client/server software, Unix applications Randy Weston (508) 628-4869
@Computerworld Wylie Wong (650) 548-5581

Opinions

Columns Editors Kevin Fogarty (508) 820-8246
Michael Goldberg (508) 620-7789
Steve Ulfelder (508) 620-7745
West Coast bureau chief Frank Hayes (503) 252-0100

Department Editor/Features

Technology reviews/ Buyer's Guide James Connolly (508) 820-8144

Senior Editors/Features

Managing Allan E. Alter (508) 620-7714
Special reports Gary H. Anthes (202) 347-0134
Features writer Kevin Burden (508) 620-7717
Buyer's Guide Cathleen Gagne (508) 620-7729
Management Robert L. Scheier (508) 628-4931
In Depth Steve Ulfelder (508) 620-7745
IT Careers David B. Weldon (508) 820-8166

Associate Editors/Features

Buyer's Guide Amy Malloy (508) 620-7754
Managing Rick Saia (508) 820-8118

IDG News Service Correspondents

Paris bureau chief Jeanette Borzo (33) 1-4904-8001
UK correspondent Kristi Essick (44) 171-416-0701

Research

Bob Fink, senior research manager (508) 820-8116, Laura Hunt, research analyst, Stefanie McCann, senior graphics coordinator; Mari Keefe, online researcher.

Copy Desk

Ellen Fanning, managing editor (508) 820-8174, Roberta Fusaro, assistant managing editor; Christina Aicardi Maguire, Jamie Eckle, David Ramel, senior copy editors; Kimberly Blackburn, Michelle Davidson, senior production copy editors; Pat Hyde, Monica Sambataro, Keith Shaw, copy editors, Jeremy Selwyn, senior online copy editor.

Graphic Design

Tom Monahan, design director (508) 820-8218, Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Alice Goldberg-FitzHugh, Amira Harari, April O'Connor, graphic designers; Rich Tennant, John Klossner, cartoonists.

Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (650) 548-5563.

Computerworld Magazines Group

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrorey, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Mary Beth Welch, art director.

@COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, which is an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.
Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp. 33,51
Aberdeen Group, Inc. 24,51
Accent Technologies, Inc. 74
Advanced Technology Laboratories 28
Aetna/U.S. Healthcare 2
Agave Software Design, Inc. 49
Allaire Corp. 49
AlliedSignal, Inc. ..... Cover 1,1,36,57,63
Amdahl Corp. 63
American Management Systems, Inc. 69,72
American Red Cross 63
Ameritrade, Inc. ..... Cover 1
AMR Corp. 10
Apple Computer, Inc. 48,57,63
Ark Research Corp. 63
Ascent Solutions, Inc. 57
AT&T Corp. 10,88
Aurora Development Group 12
BA Merchant Services, Inc. 1
BankAmerica 1
Baranof Software, Inc. 33
Bay Networks, Inc. 3,33
BDM International, Inc. 43
BDP International 63
Bell Atlantic Corp. 47
Bell Atlantic Network Integration, Inc. 8
Bellcore 74
Beloit Corp. 8
Beneficial National Bank 2
BJ's Wholesale Club 2
Boise Cascade Corp. 47
Borland International, Inc. 112
Brewers Retail, Inc. 63
Cabletron Systems, Inc. 51
Calvin Klein, Inc. 24
CareData Reports, Inc. 2
Centra Software, Inc. 47
Charles Schwab & Co. ..... Cover 1
Checkpoint Software Technologies, Inc. 74
CIMI Corp. 33
Cisco Systems, Inc. 3,33,51,74
Citicorp 12
Cleveland Clinic Foundation 57
Client/Server Labs LLC 74
Cloudscape, Inc. 14
Cognitive Diagnistics 116
Colonial Savings, F.A. 57
Colorado Compensation Insurance 69
Columbia Gas System 10
Compaq Computer Corp. ..... Cover 1,3 63,74
Computer Associates International, Inc. 51
Concord Communications, Inc. 10
Coopers & Lybrand LLP 47
Corel Corp. 57
Cottonwood Software 57
Cray Computer Corp. 4
Cryptocard Corp. 74
Current Analysis 3
CyberSupply 47
Data System Services Group 57
Dataquest 17,28
Datek Securities Corp. 112
Dell Computer Corp. 17,88
Detroit Edison Co. 88
Digital Equipment Computer Users Society 3,33
Digital Equipment Corp. 3,4,8,17 33,43,51,63
Donaldson, Lufkin & Jenrette Securities Corp. 112
Drive-Savers, Inc. 28
Duke Energy Co. 51
Eaton Corp. 57
Electronic Data Systems Corp. 8,88
Electronic Privacy Information Center 3
EMC Corp. 20,63
Emergent Corp. 8
Encore Computer Corp. 20
Equifax, Inc. 4
EShare Technologies ..... Cover 1
ESPN ..... Cover 1
ETrade Group, Inc. 112
Everen Securities, Inc. 108
Federal Express Corp. 88
Figtree Technology, Inc. 3
First American Bankshares, Inc. 8
First Call Corp. 8
First Union Corp. 8
Ford Motor Credit Co. 88
Forrester Research, Inc. ..... Cover 1,1 43,57,69
Fox-Pitt, Kelton, Inc. 2
G2R, Inc. 43
Gartner Group, Inc. 4,16,51,71,72
Genuity, Inc. 43
Goodale & Barbieri Cos. 12
Granite Systems 33
Greyhound Lines, Inc. 51
Group Health, Inc. 20
GTE Corp. 6,51
Gulf States Toyota 20
Hewlett-Packard Co. 1,3,4,17 33,43,51,63
Highpoint Technologies 63
Hitachi Data Systems Corp. 20,63
Horizon/CMS Healthcare Corp. 51
HT Medical Systems 116
Hurwitz Group, Inc. 3
IBM 1,4,6,8,20,43 57,63,69,108,112
Ichat, Inc. ..... Cover 1
Information Resources 43
Informix Software, Inc. 10,16,43
Inland Steel Co. 88
Insight Software Solutions, Inc. 57
Insituform Technologies, Inc. 69
Inso Corp. 1
Integrated Software Solutions, Inc. 43
Intel Corp. 3,8,33,51,63
Intelligent Environments 57
Interactive Learning International Corp. 47
Internal Revenue Service 37
International Data Corp. 28,47
Internet Mail Consortium 47
Internet Security Systems, Inc. 49,74
Iomega Corp. 63
J. P. Morgan & Co. 72
Johnson Associates, Inc. 12
Jupiter Communications, Inc. ..... Cover 1
Kraft Foods, Inc. 88
Kuck & Associates, Inc. 8
Lawrence Livermore National Laboratory 47
Learmonth & Burchett Management Systems 57
Lexis-Nexis 57
Liz Claiborne, Inc. ..... Cover 1,88
Lockheed Martin Corp. 51
Long Island Jewish Medical Center 2
Lotus Development Corp. Cover 1,1,33,57
Louisana Department of Labor 28
Mail Boxes Etc. ..... Cover 1
Mapics, Inc. 8
MapQuest, Inc. 47
Maritime Telephone & Trust Co. 51
MasterCard International, Inc. 1
MCA Records ..... Cover 1
McConnell Consulting, Inc. 51
McDonald's Corp. ..... Cover 1
Meca Software LLC 43
Meritor Savings Bank 8
Meta Group, Inc. 8,28
Microsoft Corp. ..... Cover 1,1,8,14,24,33 47,48,49,51,57,63,74,83,88,108,112
Miniature Precision Bearings Corp. 69
Monsanto Co. 43
Motorola, Inc. 112
Mott's North America, Inc. 12
Mutual Insurance Corp. 28
National Discount Brokers ..... Cover 1
National Science Foundation 8
National Victims Center 6
NDC Communications, Inc. 3
Netiva Software Corp. 47
Netscape Commmunications Corp. ..8,14 24,43,47,51,112
Netwave Technologies, Inc. 51
Network Associates, Inc. 83
Network Solutions, Inc. 8
New York Hospital/Cornell Medical Center 2
Newbridge Network Corp. 51
North Shore University Hospital 2
Novell, Inc. 3,8,24,51,112
Novonyx 8,24
Object Management Group 14
Office Depot, Inc. 47
OfficeMax, Inc. 47
Oracle Corp. ..... Cover 1,2,6 8,12,112
Oracle Tools Division 88
Oxford Health Plans, Inc. 2
Pegasus Systems, Inc. 43
Perot Systems, Inc. 51
Piper Jaffray, Inc. ..... Cover 1
PlaceWare, Inc. 47
Portasoft Corp. 51
Pretty Good Privacy, Inc. 48
Priority Pharmacy 28
Pristine Capital Management ..... Cover 1
Progressive Insurance Corp. 17
Prudential Insurance Company of America 2
Pyramid Technology Corp. 2
Qualcomm, Inc. ..... Cover 1
Racing Radios, Inc. ..... Cover 1
Raptor Systems, Inc. 74
Real Networks 74
Red #40 63
Red Storm Entertainment, Inc. 14
Reliance National Insurance Co. 1
RPS, Inc. 14
Rubin Systems, Inc. 4
Safeware, Inc. 28
San Antonio Spurs Basketball Club Ltd. 63
Sanga International, Inc. 14
SAP AG 12
SAP America, Inc. 69
Scottsdale Insurance Co. 69
Secure Computing Corp. 74
Semico Research Co. 33
Sequent Computer Systems, Inc. 43
Share, Inc. 20
Silicon Graphics, Inc. 4,8,88
Simulation Sciences, Inc. 43
Simware, Inc. 51
Sirf Technology 116
Society for Information Management. 69
Software Builders International 77
Solomon R. Guggenheim Museum 24
Soundview Financial Corp. 108
Staples, Inc. 47
StarBase Corp. 57
Strategic Research Corp. 63
Sun Microsystems, Inc. 4,14,20,43 48,57,63,74,112
SunGard Recovery Services, Inc. 43
SuperCede, Inc. 57
Supplies Online 47
Sybase, Inc. 43,47
Symantec Corp. 83
Syquest Technology, Inc. 63
Tally Systems Corp. 33
Technology Business Research, Inc. 4,63
TeleChoice, Inc. 6,33
The Association for Information and Image Management International. 8
The Clipper Group, Inc. 20
The Gap, Inc. 16
The Standish Group International, Inc. 8,57
The Yankee Group 33
Thomson Financial Services 33
Time Magazine 88
Tivoli Systems, Inc. 3,51
Tredegar Industries, Inc. 28
Truste 8
Trusted Information Systems, Inc. 74
Unicare 3,33
Unisys Corp. 8
Universal Studios 88
University OnLine Publishing, Inc. 47
USTrust Bank Corp. 24
VDOnet Corp. 74
VeriFone, Inc. 1
Vertical Systems Group 51
Visa International, Inc. 1
Visual Networks, Inc. 10
Vixel Corp. 12
Workfire, Inc. 57
Workgroup Strategic Services, Inc. 63
World Information Network LLC 43
Yahoo, Inc. 108
Yankelovich Partners, Inc. 43
YMCA Inland Northwest 12
Zing Technology Corp. 74
Zona Research, Inc. ..... Cover 1,6

THERE'S AN EMERGENCY BOARD MEETING. THE CFO NEEDS NUMBERS BY NOON!

You Need Them
Fast
You Need Them
Right
You Need
CFO Vision™

When you're under pressure to make critical business decisions, CFO Vision software delivers the timely and accurate information you need.

CFO Vision is the single source for all your key business information, both financial and non-financial—readily accessible for interactive analysis and reporting. It's never been easier to see product and customer profitability, the potential impact of a reorganization, or key performance indicators—in any currency.

You can view your business from all angles because CFO Vision is the first financial consolidation and reporting software that integrates flexible multidimensional analysis (OLAP). All from one vendor...SAS Institute, the leading name in decision support at more than 29,000 companies worldwide including the Fortune 100.

For a closer look, give us a call or visit us at www.sas.com/vision

SAS® SAS Institute Inc.

The Business of Better Decision Making

E-mail: cw@sas.com www.sas.com/vision 919.677.8200 In Canada 1.800.363.8397

SAS is a registered trademark, and CFO Vision a trademark, of SAS Institute Inc. Copyright 1997 by SAS Institute Inc.

Stock drop tests online brokers

CONTINUED FROM COVER 1

Cambridge, Mass. "Sure, there were problems, but that was true across the board in the industry."

In fact, some full-service brokers couldn't complete trades placed in the morning until late afternoon, and all the while telephone lines were jammed, industry watchers said.

"If you and 25 other people are calling your broker, you'll stay on hold for half an hour. The Internet was the fastest thing going," said Bill Burnham, an analyst at Piper Jaffray, Inc. in Minneapolis.

Still, online brokers saw volumes that few had been prepared to handle, even though users have been flocking to online trading during the past year [CW, Sept. 29].

"In the planning stages you say, 'Let's build for the worst case, so we don't worry about going out of business' during a crush," said John Holman, managing director of Internet services at National Discount Brokers in New York.

"But you can't duplicate a 1.2 billion-share day" in quality assurance tests, he said.

Even though online brokerages rushed to free up access to their sites (see story at right), not all users were happy.

ETrade Securities, Inc. and Charles Schwab & Co. were blasted on Internet discussion groups by disgruntled users who had problems accessing their sites on the Internet. But an ETrade spokeswoman pointed out that about one-third of its 200,000 account holders accessed the system on Tuesday alone.

That is little consolation for those who lost the chance to make a deal.

"Imagine you are sitting in a traffic jam, and your wife beside you is about to deliver a baby. That is the feeling you get when you know you can make a major profit but just can't get your hands on your money," said Xiangdong Shi, a San Diego investor who had to wait all day to get a morning trade confirmed on ETrade's site.

Gazala said online brokers could take a page from their full-service brethren and do everything possible to assuage customers such as Shi.

For example, he said, some full-service brokers planned to reimburse customers for money lost in trades that weren't completed when requested. Others performed trades commission-free at branch offices if users couldn't make a trade over the phone.

But the Internet creates different problems in verifying such trade attempts.

"If we have a ticket and don't execute a trade, then there is no problem in reimbursing a customer," said Mike Anderson, president of Ameritrade, Inc. in Omaha. "But with the Internet, I think that can turn into a black hole. That is why we offer six different ways to place trades" in addition to the Internet.

But online brokerages should make those methods clear so that if users can't get through, they know the best option to get their trade in, Burnham said.

Still, "technology has taken over the Street," Holman said. "If this would have happened five years ago, even the New York Stock Exchange wouldn't have been able to handle the volume." □

WHEN IT RAINS, IT POURS

Internet stock trading hit new heights in last week's stock market deluge:

- ETrade, which normally handles **24,000** trades per day, hit **50,000** trades on Tuesday alone.
- With Web access slow, **ESchwab's** phone system volume went from **250,000** calls per day to **430,000** on Monday.
- Volume on **Ameritrade's** site was **42%** above normal on Monday. On Tuesday, it jumped **62%** above Monday's tally.
- **The Motley Fool's** Internet investor chat room saw traffic increase from a normal **50** users to nearly **300** on Monday.

Handling the onslaught

Online brokers moved immediately last week to do what they could to handle the tsunami of trades.

- **At National Discount Brokers, 15 Internet staffers were put up in Manhattan hotels and told to order in all meals in case they needed to jump on an access problem.**
- **Datek Securities Corp. in Iselin, N.J., added three Web servers on Tuesday night to double its capacity.**
- **DLJ Direct, a division of Donaldson, Lufkin & Jenrette Securities Corp. in New York, added servers Monday night to increase capacity by 66%. Tuesday night it added even more servers to bump capacity up another 33%.**
- **ETrade Group, Inc. added servers over the weekend and again on Monday after seeing results from Asia.**

— Stewart Deck, Kim Nash and Tim Ouellette

Travel agency builds scalable Web site to ease online traffic jams. Page 43

AlliedSignal races to the Web

CONTINUED FROM COVER 1

could cut $500,000 in yearly electronic data interchange (EDI) costs.

Moving orders to the Internet also would make it economically feasible for smaller retailers to buy electronically from AlliedSignal, Keenan said, because EDI start-up costs can be prohibitive for such firms.

For the auto-racing enthusiast, the site will feature a car-racing section with photos shot for the site, live audio of drivers and their pit crews and special stories from ESPN commentator Bob Frey. (Allied expects to promote the Frey columns during some ESPN race broadcasts.)

DIGITAL RACING CARDS

Site visitors will be able to create their own "digital racing cards" with a driver photo and audio to send electronically to their friends. Most services will be free, although after five minutes of free audio, the site will sell time from a telephone-based service called FanScan from Racing Radios, Inc.

And for the average car owner, there will be artificial intelligence software to help diagnose car problems. Free for a 30-day trial download, the AutoTech software will likely retail in stores next year for $49.95.

MARK ALCAREZ

AlliedSignal's Eric Singleton and Kristy Davis

The site has involved every aspect of AlliedSignal's auto aftermarket business unit — from sales and marketing to shipping and customer service — as the project team thrashed out which service to put online. "There's no department that it didn't touch," program manager Kristy Davis said.

Like many manufacturers, AlliedSignal had to face the sensitive issue of how to deal with existing distributors, retailers and sales territories before moving all its conventional product sales online. AlliedSignal decided that at the motor sports section of the site, consumers will be able to look up parts numbers for items such as oil filters, although they will be able to buy only relatively rare goods not generally stocked in stores.

Actual sales to consumers will be limited to novelty items such as racing hats and jackets. This creates a new source of revenue for the company.

Working with Agency.com, a Web site design firm in New York, the project team sought an uncluttered look for its fairly complex site. The opening screen has just three choices: Motor Sports, Catalog and The Answer Man. Once in the catalog section, corporate customers click on business partners and enter a user name and password; other users can navigate through consumer options.

AlliedSignal will host the site on mirrored Compaq Computer Corp. servers running Windows NT with links back to the company's IBM AS/400. Secure Sockets Layer encryption will be used for financial transactions. The site has been benchmarked for 300,000 hits per day.

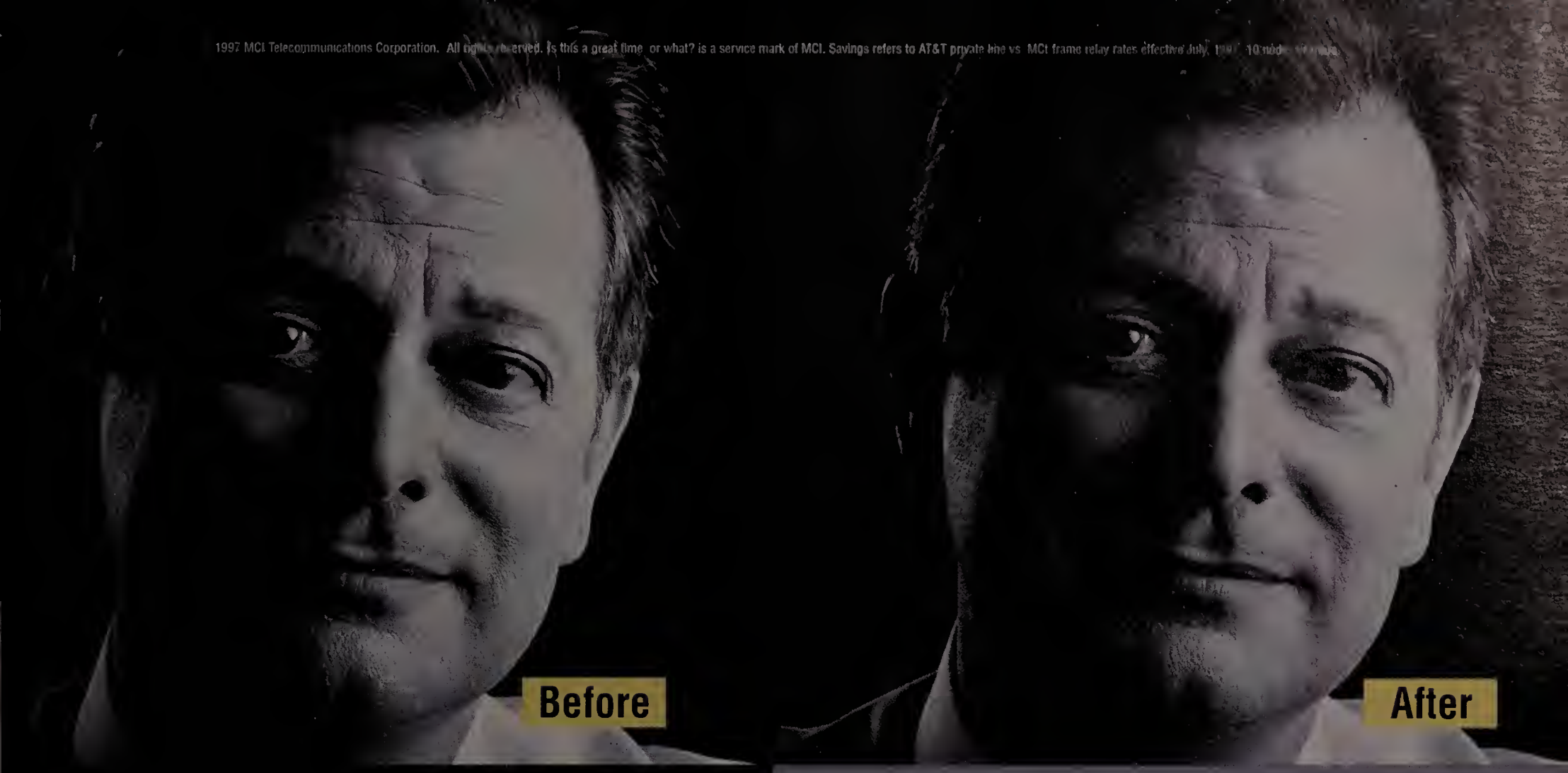
AlliedSignal considers the site a new product and expects it to generate revenue, not merely wave the corporate flag in cyberspace, Singleton said. "This venue is the venue for the supply chain, no matter where they are," he said. □

Software tools help AlliedSignal, others juggle data among storage systems. Page 63

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. Computerworld (ISSN 0010-4841) is published weekly; except a single combined issue for the last two weeks in December by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N Zeeb Road, Ann Arbor, Mich 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Olk, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest, St. Paul, Minn. 55112, (800) 217-7874. Fax: (612) 633-1862. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $3 a copy. U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

ABC ABP RED TAG

1997 MCI Telecommunications Corporation. All rights reserved. Is this a great time or what? is a service mark of MCI. Savings refers to AT&T private line vs MCI frame relay rates effective July, 1997. 10 nodes [illegible]



How a basic go-with-the-flow data systems manager suddenly transformed himself into a dynamic action-packed man of tomorrow.

He always knew running his company's mainframe data through private lines was a huge waste of money. But what could he do? Management wasn't about to give him the funds to fix something they didn't think was broken.

That is, until he explained to them how easily MCI could convert the company's SNA traffic from private lines to an MCI advanced frame relay network.

How, unlike with other contractors, it wouldn't require investing in new equipment. How most of the work could be done at MCI. And how only MCI would let him prioritize the flow of traffic.

Most important, he told them how this conversion could save the company up to 40%.

With those savings, it could afford things like a Web site or intranet.

Perhaps even to give him a nice big corner office.

For more information, visit www.mci.com or call 1-800-659-5479.

SNA-FRAME RELAY SOLUTIONS

Is this a great time, or what?

MCI

Microsoft fought the law: secret tapes . . .

Bill Laberis

As I entered a hotel meeting room last month, who should be leaving the room but Ralph Nader, Janet Reno, Sun CEO Scott McNealy and West Coast tortmeister Gary Reback.

They left behind a tape of their proceedings.

Reno: I've agreed to come to this informal meeting to hear all sides of the arguments, and I see Scott and Gary here. But where's Mr. Gates?

Nader: Oh, I'm representing him, Ms. Reno. Bill has always said his is a company built upon computing power to the people, and who better reflects "the people" than old Ralphie?

Reno: Well, I guess that's fair. Look, I don't have a lot of time today. I have these dang Senate hearings, plus the Dolphins are playing tonight. So let's get right to the facts.

McNealy: Facts? Why?

Reno: Because, Scott, that's the way this administration and this attorney general do things.

McNealy: (Aside, to Reback) Did she just wink at me?

Reback: Chump, she just winked at all of us.

McNealy: Huh? Oh. Oh, yeah. Right! (Loudly, for all) Let's look at them facts!

Reno: It looks like we have two issues, one dealing with Microsoft and Java and the other with Microsoft's alleged bundling of its Explorer browser. Let's start with Java. Now Scott, it's your position that Microsoft is trying to balkanize Java into different kinds of Java, including one that runs best on Windows.

McNealy: Hairballs. They want to . . .

Reno: Scott, didn't your mother teach you that if you don't have anything nice to say about people, then . . .

McNealy: Sorry. Anyway, the issue is that the people, Ms. Reno — and I do stress the people — want a computing standard, and Java is just that standard.

Reno: But isn't there a standard already? You know, Windows?

Reback: Yes, but Java has the people behind it, the little people. You know, like Oracle, IBM, Motorola . . .

McNealy: And Microsoft would seek to silence the people, the dirt bags.

Reno: Hmmmm. I see. Maybe we should move on to this Explorer thing. Ralph, help me out here. Microsoft is giving Explorer away now, and you want the government to stop them?

Nader: Janet, this is the heart of the issue with Microsoft. They continually bundle things into their operating system, from utilities to disk compression to networking, and now their browser. They use their market clout to give these things away to corporate buyers.

Reno: Wow. That must be killing their bottom line.

Reback: Well, not exactly. Their gross profit margins in the last quarter were 92%.

Reno: Then they must be using these giveaways to control the browser market.

Nader: Actually, Netscape has about 65% of that market, Jan, but not for long, if Microsoft continues its ways.

Reno: But I just read a big review in some trade rag where Explorer blew away Netscape's Navigator. I also read where people like Mike Dell are saying that if he sold PCs without Explorer, his buyers would revolt!

McNealy: Lint heads.

Reno: That's enough, Scottie. Microsoft has been a monopolist for some time, so surely by now we must be seeing the upward price movement of software in the segments they dominate.

Reback: Well, actually, their prices have been declining. I suppose you could argue that their products have been getting better, too, if you consider what NT has done in the enterprise. But all that is beside the point here.

Reno: What the hell is the point?

Reback: We thought you'd be interested in how Mr. Gates himself characterized his company's conduct. He said . . . he said . . . "This is called capitalism."

Reno: He said what?

Reback: "Capitalism."

Reno: (Shouts to her aide) Tom, we've got one on the hook. A big one. Full speed ahead!□

Editor in chief at Computerworld *from 1986 to 1996, Laberis is now president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His Internet address is bill@laberis.com.*

. . . and an international perspective

David Moschella

What if Microsoft were a foreign company? If you're trying to sort through the legalities and moralities of the Department of Justice's efforts to show Microsoft in contempt of its 1995 consent decree, consider this change in perspective.

Suppose Microsoft is a Japanese company. A new U.S. company called Netscape begins to grow rapidly in an important new software category called browsers. Because the browser appears to threaten the central role of the PC operating system, the Japanese giant responds by offering its own browser for free and requiring the world's PC makers to bundle it with all new sales.

What would be the reaction in the U.S.? Is there any doubt that Congress, the executive branch and the American people would demand and soon get action? Remember the fierce attacks against Japanese dynamic RAM vendors in the 1980s? All they were accused of was selling their products below cost. Imagine the furor if they had suddenly started offering free DRAM just to prey on weaker competitors.

The lesson is clear. Public perceptions are shaped much more by perceived national interest than by any sense of right and wrong. One of the reasons Microsoft has been free to roam virtually unchecked for the past decade is that all its trampled competitors happen to be American. If WordPerfect, Borland, Novell or Netscape were French or German, the dialogue would have been more heated.

In the face of this widespread political and citizen indifference, it took a lot of courage for the already beleaguered Janet Reno to challenge the world's most powerful corporation. What's in it for her?

Understandably, the Department of Justice has chosen to move carefully. It can make a strong case that the forced bundling of Explorer has in fact violated the consent decree. Other than Microsoft employees, do you know anyone who doesn't think that for the past two years, Internet Explorer has been much more of a separate product than an integrated Windows 95 feature? Microsoft will deny and delay, but its own actions and statements confirm the Justice Department's position.

The end of forced bundling might seem like a minor victory, but the implications could still be dramatic. If the courts decide that today's Explorer is indeed a separate product, how can they possibly avoid the conclusion that Microsoft's providing it for free constitutes a predatory act? If Microsoft could be forced to charge a reasonable price for Explorer (say its total cost of development, marketing and distribution divided by total unit sales), today's competitive dynamics would change a lot.

Pundits are wrong to argue that with next year's release of Windows 98, the issue is moot. There still will be hundreds of millions of Windows 95 machines that Microsoft will want to upgrade to Explorer 4.0 and future browser releases. Whether it is allowed to do this for free is still important to Netscape and the future of Internet software competition.

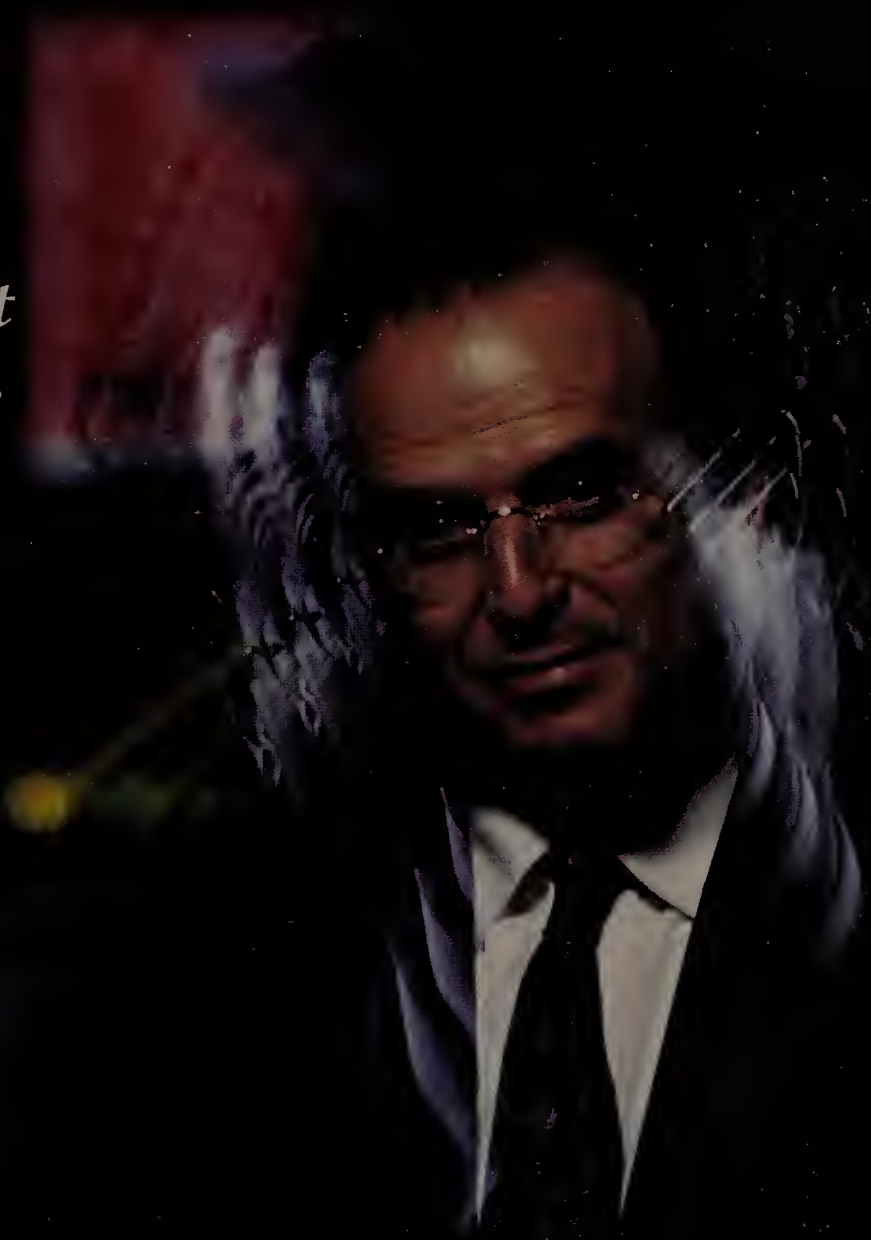
The bottom line is that if Microsoft wants to develop integrated browser/operating system software, the company should be free to do so. But it shouldn't be able to offer two separate products and give one of them away based on false claims of an integrated offering.

That is what Microsoft has been doing. Hats off to the Justice Department for finally trying to set the record straight. It may well prove to be too little, too late, but at least Justice has shown the courage to act.□

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is david_moschella@cw.com.*

Hyperion Software. The smart way to make your company more intelligent.

Hyperion Software makes it easy for you to open your company's data warehouse without compromising anything.



Imagine your company's key people having the information they need to make critical business decisions at their fingertips without you lifting a finger to help them get it?

With Hyperion analytic financial management solutions, there's nothing imaginary about it.

Take Hyperion OLAP. Its built-in Financial Intelligence™ opens the door to your company's data warehouses, enabling line managers to access, analyze, report and model information on the spot – without taking up your time in the process. And because Hyperion Software easily integrates into your technology infrastructure, there's no need to reinvent or re-engineer your existing systems and standards.

For more information about Hyperion Software, and why more than fifty percent of the FORTUNE 500® use it, call 1-800-286-8000. Or visit us at www.hyperion.com.

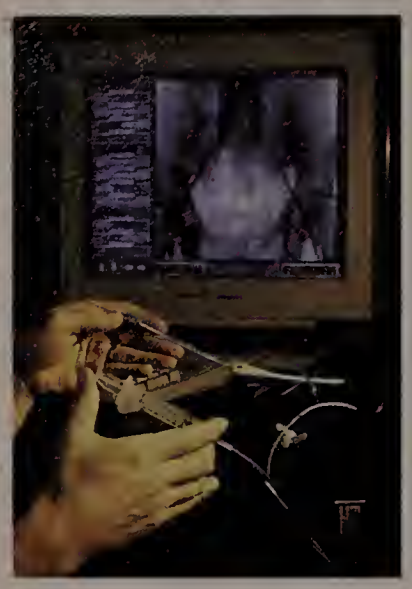
Hyperion
SOFTWARE

Listen to your business.

The Back Page

alt.CW

Dispatches & images from the fringes of the electronic frontier



NO 'OOPS' IN THE O.R.

Athletes and musicians practice their skills a lot. But it's hard for surgeons to get much practice before working on patients. So HT Medical Systems in Rockville, Md., is developing a virtual reality system that allows surgeons to engage in realistic "operative rehearsal" without risk to patients. Partial funding is provided by the U.S. Department of Commerce's Advanced Technology Program.

In the labs

Dr. Gary Haynes, an anesthesiologist and researcher at the Medical University of South Carolina in Charleston, has developed a hospital wristband that has a memory disk the size of a watch battery. Reuters reports the bracelet will allow patients to carry identification and key portions of their medical records wherever they go. The disk can be connected to a handheld PC for updating.

The National Center for Atmospheric Research in Boulder, Colo., has developed software for commercial airliners that measures in-flight air turbulence via existing instruments. The data will be compiled in a federal database and eventually used to create "turbulence forecasts" to help pilots steer clear of the bumpy air.

A novel software program that analyzes the brain and computes the user's IQ may have a new role: detecting the early stages of Alzheimer's disease and other forms of mental deterioration. The software from Cognitive Diagnostics in Newport Beach, Calif., is being tested to see if it can screen for people who should get early drug treatment for Alzheimer's.

Sirf Technology in Sunnyvale, Calif., has dramatically cut the size and power consumption of Global Positioning System devices. These smart antennas can be used with laptops or handheld devices to navigate in "urban canyons."

Digital archives

20 YEARS AGO
(NOVEMBER 1977)

- **Headline: Banner year** for Data General
- **Digital Equipment** announces a **32-bit VAX** minicomputer.

10 YEARS AGO
(NOVEMBER 1987)

- **Borland** ships **Quattro spreadsheet**, including emulation of Lotus 1-2-3 commands, triggering a legal battle over whether software's "look and feel" can be copyrighted.
- **Compaq** makes its **1 millionth PC.**
- **Lotus** announces the **Agenda package** for managing textual information.
- **Kaypro** discontinues the "luggable" 26-lb. **Kaypro II PC** that made it famous.

Inside Lines

Netscape a no-go for trade show

Don't bother to scour the show floor for Netscape's booth at either of the big upcoming trade shows in Netscape's bailiwick, Comdex/Fall '97 in Las Vegas and Internet World '97 in New York. The Mountain View, Calif., software maker has decided to skip the big Q4 shows. "It's an experiment this quarter. We're trying other ways of reaching our customers directly," a Netscape spokeswoman said. "We didn't realize a significant number of qualified sales leads from prior shows."

Off with their heads

Analysts are worried that GTE might have been hasty in picking The Bastille as the name for its new monthly service for police departments to link up on the Web (see story, page 6). A GTE official said The Fortress and other names were already taken. But analysts said The Bastille conjures up images of French peasants reacting violently to a hated symbol of the aristocracy before the French Revolution. Joked analyst Rebecca Wetzel at TeleChoice in Upton, Mass., "Why didn't they just go all the way and call it The Guillotine?"

Network on, dude

Novell is pulling out all the stops to promote its new directory services offering — NDS for NT — on the rival Windows NT platform. The company is offering a series of free half-day technical seminars nationwide to promote the product during November. Early user Josh Turile, information services manager at Ad Life Marketing in Norwood, Mass., said, "It's a very useful product, and I expect the second version to rock most excellently."

Happy Birthday to . . .

With all the hoopla over Microsoft Chairman Bill Gates shelling out $21 million to buy himself a jet for his birthday 10 days ago, we wouldn't want to overlook anyone. Jim Allchin, Microsoft's senior vice president of the Desktop and Business Systems Division, also had a birthday last week. Word among his staff was that Allchin, one of Microsoft's most celebrated workaholics, was planning to mark the occasion by sneaking out a few hours early.

Remote support

We hear Cabletron Systems will soon announce a series of remote access modules that will enable IS managers with its MMAC-Plus data center switching system to support remote workers using ISDN and digital modems. Prior to this, the high-end data system had no remote access capabilities. The Rochester, N.H., networking vendor declined to divulge additional details.

Lack of Web support costs Lotus

Services giant Andersen Consulting remains committed to Lotus Notes for messaging and groupware. But the company's intranet is a conglomeration of Microsoft technology, including Internet Information Server and SQL Server, Andersen insiders report. The reason: When Andersen was putting together its intranet plan two years ago, Notes was lacking in Web support. Speaking of defections to Microsoft, The Mesa Group in Newton, Mass., this week will announce a new consulting service aimed at companies that are looking to migrate from Notes to Exchange, according to sources close to the company.

We recently received a pitch from a firm that claimed in its press release to be able to solve the "year 200" problem. We assume this revolves around some horrible calendar mistake made by the citizens of the crumbling Roman Empire. Or maybe the year 2000 bug hit the vendor when they wrote the release! If you have a current press release, send it on over to News Editor Patricia Keefe at (508) 820-8183 or E-mail her at patricia_keefe@cw.com.

WE'VE HIT THE BIG TIME.

MICRON™ NETFRAME® SERVERS. THE TOAST OF THE TOWN.

Meet the newest stars in enterprise servers.

We're making a big entrance with our Micron NetFRAME 9000 enterprise class servers — offering high-performance, high-availability server technology.

Our Micron NetFRAME NF9008 and NF9016 models deliver groundbreaking Hot Plug PCI technology, allowing you to expand, repair and reconfigure your system online without disturbing users. It's an industry first — and it'll redefine the way you perform network maintenance.

Combine this with our breakthrough triple-peer PCI architecture, firewalled I/O, NIC load balancing and failover, and internal monitoring and maintenance, and you've got a system designed from the ground up for high availability in business critical network environments.

This cutting-edge server technology is matched only by Micron's excellent customer service and incomparable value. All Micron NetFRAME servers are shipped directly to you, and they're backed by our 24-hour technical support, outstanding customer service and one of the best limited warranties in the industry.

You'll applaud the Micron NetFRAME 9000 series. Call us or visit our Web site today. And see why the spotlight's on us.

NetFRAME NF9008

Dual Intel 200MHz Pentium® Pro Processors
512K secondary cache
256MB RAM
4 x 8.7GB Ultra-wide SCSI-3 hard drives
1 Hot Swap/Hot Add Ethernet 10/100MB/s PCI
1 Hot Swap PCI Single-ended Ultra SCSI Adapter
2 Hot Swap/Hot Add power supplies
Triple Peer PCI Architecture (400MB/s)
Firewalled I/O
Tri-zonal cooling
IntraPulse™ System Management
Parity Checking on all data paths

STANDARD FEATURES
One to four-way Intel 200MHz Pentium Pro processor with 512K cache
Up to 4GB maximum ECC memory
8 Hot Swap/Hot Add PCI slots
8 Hot Swap/Hot Add 1.6 inch drive bays (expandable to 315GB)
1 Hot Swap/Hot Add power supply (upgradeable to 3 N+1 redundant power supplies)
8 Hot Swap fans
Dedicated server technical support, 7x24
1 year 2nd business day on-site service
5-year/3-year Micron Power℠ limited warranty

$19,974
Bus. Lease $632/mo.

NetFRAME NF9016

Dual Intel 200MHz Pentium Pro Processors
512K secondary cache
512MB RAM
10 x 8.7GB Ultra-Wide SCSI-3 hard drives
2 Hot Swap/Hot Add Ethernet 10/100MB/s PCI
2 Hot Swap PCI Differential Ultra SCSI Adapters
2 Hot Swap/Hot Add Power supplies
Triple Peer PCI Architecture (400MB/s)
Firewalled I/O
Tri-zonal cooling
IntraPulse System Management
Parity Checking on all data paths
Rackmountable systems

STANDARD FEATURES
One to four-way Intel 200MHz Pentium Pro processor
Up to 2GB maximum ECC memory
8 Hot Swap/Hot Add PCI slots (expandable to 16)
10 Hot Swap/Hot Add drive bays (expandable to over a terabyte of storage)
1 Hot Swap/Hot Add power supply (upgradable to 2N redundant power supplies)
10 Hot Swap/Hot Add fans (expandable to 14)
Dedicated server technical support, 7x24
1 year 2nd business day on-site service
5-year/3-year Micron Power limited warranty

$39,999
Bus. Lease $1,580/mo.

Call now to order.

800-SERVERS

www.micronpc.com

MICRON ELECTRONICS™

THINKING OUT OF THE BOX™

MICRON POWER℠ WARRANTY

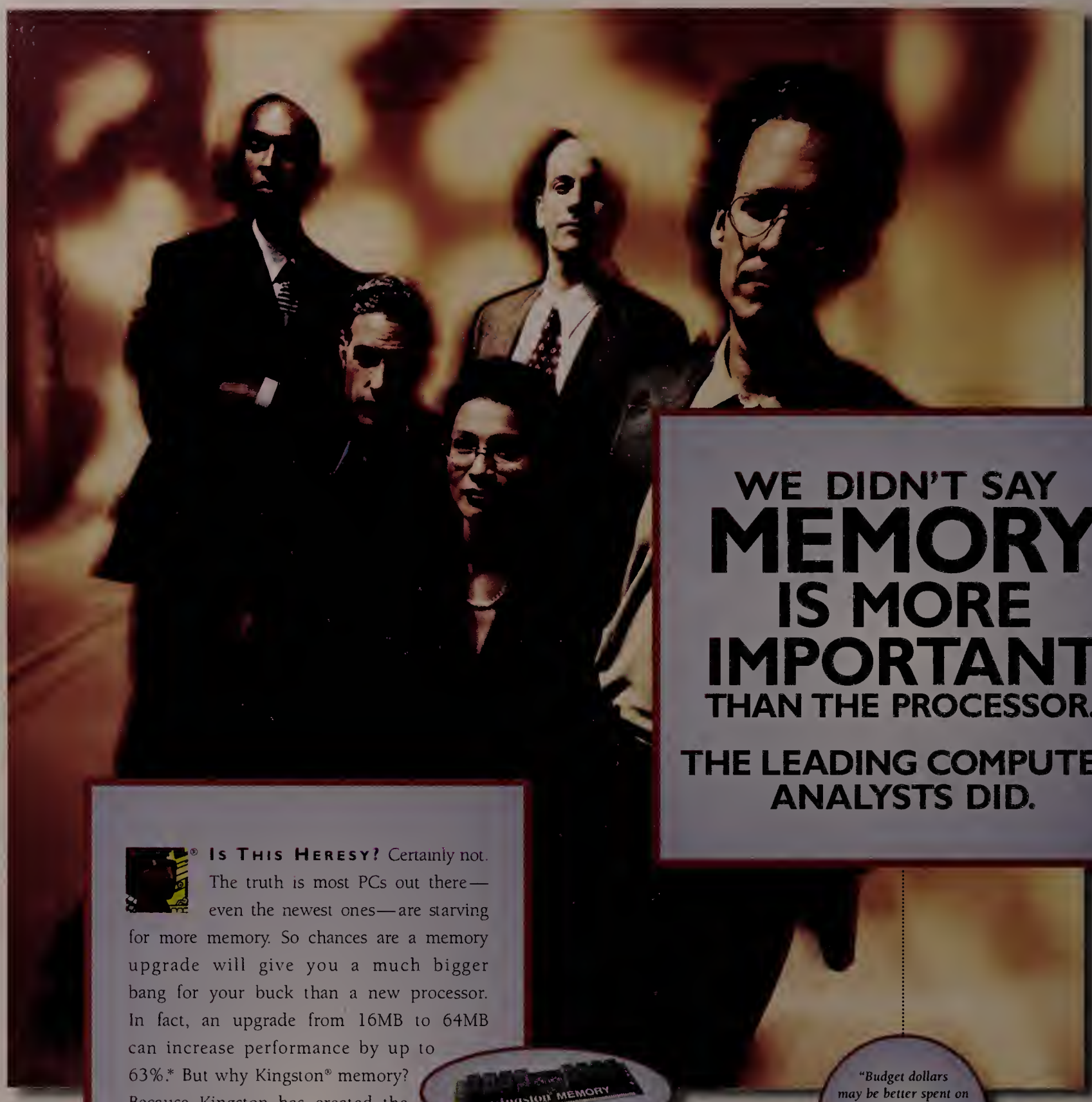
- 5-year limited warranty on microprocessor and main memory
- 3-year limited parts-only system warranty (1-year for TransPort VLx)
- 1-, 2- or 3-year optional on-site service agreement for Micron desktop and server systems
- 30 days of free Micron-supplied software support for Micron desktop systems; 3 optional network operating system incident resolutions included for Micron server systems
- 30-day money back policy
- 24-hour technical support

The foregoing is subject to and qualified by Micron's standard limited warranties and terms and conditions of sale. Terms and conditions of sale may vary for specific configurations. Copies of the limited warranties may be obtained on our Web site or by calling Micron

Micron Sales Hours: Mon-Fri 6am-10pm, Sat 7am-5pm, Sun 10am-5pm (MT)
Technical Support Available 24 Hours A Day-7 Days A Week.
Toll free from Mexico: 95-800-708-1755
Toll free from Canada: 800-708-1758
Toll free from Puerto Rico: 800-708-1756
International Sales: 208-893-8970
International Fax: 208-893-7393

intel inside® PENTIUM® PRO PROCESSOR

©1997 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping and handling and any applicable taxes. 30-day money-back policy does not include return freight and original shipping/handling charges; applies only to Micron brand products and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. Microsoft, Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. Product names of Micron products are trademarks or registered trademarks of Micron Electronics, Inc. or NetFRAME Systems, Inc. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies.



WE DIDN'T SAY MEMORY IS MORE IMPORTANT THAN THE PROCESSOR.

THE LEADING COMPUTER ANALYSTS DID.

"Budget dollars may be better spent on memory, generally a more critical system resource than processors...†"
—GARTNER GROUP

IS THIS HERESY? Certainly not. The truth is most PCs out there—even the newest ones—are starving for more memory. So chances are a memory upgrade will give you a much bigger bang for your buck than a new processor. In fact, an upgrade from 16MB to 64MB can increase performance by up to 63%.* But why Kingston® memory? Because Kingston has created the memory industry's most rigorous design, manufacturing, and testing procedures. To find out what a memory upgrade can do for your PCs' performance, visit our Web site at www.kingston.com/ad. Or call your preferred reseller. Or just call us toll-free at (800) 533-8714.

www.kingston.com/ad

Kingston TECHNOLOGY
COMPUTING WITHOUT LIMITS™

†Gartner Group Continuous Services, *Research Note*, 7/18/96. *Upgrade from 16MB to 64MB on Pentium® Pro 200 MHz. Testing was conducted by an independent service for Samsung Semiconductor, Inc. Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708, USA, (714) 435-2600, Fax (714) 435-2699 © 1997 Kingston Technology Company All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners